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Addresses.

UNNECESSARY OPERATIONS.*

By George C. Wilkins, M.D., F.A.C.S., Manchester, N. H.

After graduating from the medical school and passing through his hospital service or services, the physician who has not elected to devote his time to laboratory work or administrative duties enters upon the active practice of his chosen profession.

He at once assumes certain obligations which, although implied, are none the less imperative. In his professional life, his contact with his patients is more intimate, more responsible and demands more honesty of purpose than any other professional or commercial relationship between individuals. It is to be regretted that the principles, if not the words, of the Hippocratic oath, have not been dwelt upon in the medical school teachings, with more serious appreciation of their application to present-day conditions.

In no phase of contact between individuals should the principles of the Golden Rule be more rigidly adhered to than in the dealings of a physician with his patient. The average patient consults a physician of ability, or a man to be trusted. Whether the physician is one of the leaders of his profession or a more humble worker in the ranks, there is only one attitude for him to assume in his treatment of the patient. He must not violate the confidence; he must give the best advice that within him lies, and in doing so he will be giving what all men desire with regard to themselves—honest dealing.

We are all human, and to be human means that we all make mistakes. A man may be pardoned for making a mistake, particularly if it is a mistake in judgment, but there is no pardon for the man who deliberately violates the confidence reposed in him, and wilfully subjects his patient to unnecessary and uncalled-for procedures. Sins of omission we may censure; but what can we say of the man who maliciously commits sins of commission in the medical or surgical treatment of his patient.

Please let it be understood that this paper is not intended as an arraignment of physicians and surgeons as a body; far from it, for I believe the large majority of men in our profession hold to the beliefs which I have mentioned, and endeavor, according to their lights, to live up to them, conscientiously and faithfully.

Unfortunately, there are men scattered through the profession who are constantly guided by two factors other than the consideration of the real good of their patients. These two factors are, an abnormal development of the commercial instinct, and an ambition to forge ahead, regardless of the means utilized.

The desire for money, and we may sometimes say, the need for money, is a well-known incentive to wrong-doing, and it is impossible for some men in our profession to resist an opportunity to take what they call "ready money" for rendering some service to a patient who has falsely been led to believe that such service is necessary.

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* President's address at the Annual Meeting of the Hillsboro (N. H.) Medical Society, at Manchester, N. H., April 18, 1917.

Ambition is laudable, but ambition should not travel alone. Ambition, to be honestly successful, should be accompanied by a conscience. Ambition to accomplish a large amount of work, ambition to keep a hospital well filled, ambition to acquire the glory of many successes, have all led men in our profession away from the ideals to which they should cling, and when they have pursued this path for a certain length of time, God only can help them and their patients.

The practice of surgery opens up to these men larger fields of opportunity than can be obtained in other branches of medical practice, because the patient usually has no way of verifying the results of his operation. The patient is advised that he needs an operation; he implicitly trusts his surgeon, as all patients should, but at times this trustfulness, as observed by an uninterested onlooker, is quite pitiful to contemplate.

As an example, I will cite an incident occurring several years ago. A physician was called to a young married woman who gave a history of rather excessive flowing two weeks after a normal period. The physician, after examination, advised an intra-abdominal pelvic operation, and the patient was moved to a hospital. The husband then decided to have a consultation, and an older man was summoned. He found the pelvic organs in an absolutely normal condition and advised waiting. Two years later the patient was still in perfect health.

Another woman was advised that she needed an operation for a large cystic tumor of the ovary. She later consulted the surgeon on duty at a hospital in the same town. He found absolutely nothing abnormal in the pelvis.

Too often operations have been advised from the deductions of a snap diagnosis. This is always inexcusable, for if ever a patient deserves an adequate consideration of his case it is when his subsequent treatment contemplates the dangers of a surgical procedure, and we cannot be too often reminded that even minor operations may not be devoid of danger.

The mistakes resulting from a snap diagnosis can be illustrated by two cases, both young women, who consulted the same physician during the vacation absence of their own physicians. The first complained of backache of recent origin. She was examined vaginally at once and informed that she must have an operation on her uterus and tubes. After the return of her physician he examined her and found nothing abnormal with the pelvic organs, but did find her trouble to be due to muscle strain. Strapping her back with adhesive plaster cured the backache.

The other patient complained of a diarrhea of two or three weeks' duration. Without a physical examination, this physician advised an operation on the intestines, the exact nature of which the patient did not understand. When her physician returned, he cured her very shortly with bismuth and liberal doses of bromide.

Something might be said in regard to the inadvisability of too radical operations, when more conservative methods would produce equally good or better results. I have known of enthusiastic young operators removing the uterus in several young women for simple retroversion. This can be considered only an unnecessary procedure and absolutely unscientific.

Then, again, we have the hopeless cases—inoperable cancer and recurrences of cancers that are anatomically inoperable. Is it right or fair to open the abdomen of a woman who had a recurrence of cancer several years after a complete removal of the pelvic organs for cancer of the uterus? It is not justified, unless there is an intestinal obstruction to relieve or some such secondary complication.

One of my own cases had a recurrence about five years after primary operation. Understanding that she was to be operated by another physician, I asked him what he expected to accomplish. He replied that he did not expect to accomplish anything, but that the patient insisted upon an operation, and he might as well have her money as anyone. Two other similar cases have been related to me by other physicians.

Let us now consider that small concealed portion of our anatomy hiding away in various positions alongside the cecum—the appendix—which causes trouble enough in itself without being blamed for every transient non-febrile belly-ache that our many feet of intestines may be called upon to endure. Some surgeons seem to look upon this organ as a legitimate, or rather, illegitimate, means of enabling them to contend against the high cost of living.

Probably most of you, at some time or other, have been called upon to render judgment as to whether a certain patient has appendicitis or not, and if so, to advise whether or not he should be operated upon. There is so much latitude of opinion in these cases that we should not judge another's diagnosis and advice harshly, and never hastily, but when in a given community a number of able practitioners have case after case coming under their observation, where an incorrect diagnosis of appendicitis has been made by the same one, two or three surgeons, and these cases have been followed up for a considerable length of time without developing real symptoms of appendicitis, and are, perhaps, relieved by simple medication, then I do not think I am making too strong a statement when I say there is just cause for doubting the honesty of these men.

While, as I have said, the average patient accepts his surgeon's advice as honest, the cumulative evidence of a multiplicity of mistakes in the diagnosis of appendicitis, intentional or otherwise, has developed a fear in the minds of the laity that they may be hurried unnecessarily to the operating table.

It is perfectly obvious why more unnecessary operations are performed on the appendix than upon any other organ. In the first place, it is concealed before operation, and it may be concealed after operation. The patient is usually satisfied with the explanation that the appendix was considerably inflamed, that it had been taken just in time, or that it was found to be much worse than expected. Secondly, appendectomy in an uncomplicated case is an operation easily performed by anyone with but slight knowledge of surgery.

It is a recognized fact that the public will stand being fooled for a long time, but as a straw showing the direction of the wind, I will call your attention to the legislature of a Western state which has been considering seriously a bill (whether the bill has since passed or not, I do not know), providing that every appendix removed in the state shall be examined at the state laboratory, and if found normal, the patient is to be absolved from remunerating the surgeon. The originators of this bill may have had some experience, for in the penalty prescribed is found the true indication of its effectiveness.

This attitude which has developed in the public mind is entirely due to the activities of surgeons who have felt of the abdomen with the hand, but whose eyes have been focused on the fee.

While I think it is entirely unnecessary to cite to you cases illustrating the foregoing remarks, I will relate a story told me by a physician in the central part of this State, as it touches upon another phase of unnecessary operations, namely, surgical procedures requiring ether upon patients affected with active tubercular processes in the lungs. This should be done only after very careful consideration of the case, and with assurance that the patient will be benefited by such procedures.

A patient of this physician had an active tubercular process in both lungs, and with it a certain amount of stomach disturbance which the physician attributed to the tubercular condition. One day the patient took matters in his own hands and consulted a surgeon, who at once informed him that his appendix was the cause of his stomach trouble and should be removed. Not entirely satisfied with this, the patient journeyed on to Boston and entered a large hospital for diagnosis and treatment. At this institution he was told there were no indications of appendicitis, and was sent back to the country.

Not infrequently we are asked, "Doctor, would you advise this operation if it were a member of your own family?" and while I do not feel that it would be at all practical to apply this test to all operations, I believe a certain amount of mental consideration along this line in the mind of the surgeon in all doubtful cases, if honestly weighed in the balance of judgment, would tend to eliminate many operations, where the real indication has been the fee or the mere desire to operate, and not the ultimate good of the patient.

ARTIFICIAL PNEUMOTHORAX AND PULMONARY TUBERCULOSIS.*

By Cleaveland Floyd, M.D., Boston,

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Since Koch produced tuberculin and with it raised the hopes of the profession that a cure for tuberculosis had been found, no therapeutic measure has aroused so much interest as artificial pneumothorax.

As was true of tuberculin, so is it equally true of pulmonary compression by nitrogen, that there is a great diversity of opinion in regard to its efficacy; and even after ten years of its gradually increasing use, its exact limitations and place in the treatment of tuberculosis are not yet entirely determined. One thing, however, has been established and that is, that no patient should be denied its possible effects where other measures have failed. The procedure of its production has undergone little modification since the early work of Forlanini, and only minor modifications in technic, tending to simplify the procedure, have been adopted by most operators. The initial incision in the chest wall, as advocated by Spengler, has been entirely replaced by the much simpler procedure of thoracentesis. Injecting nitrogen into the chest, however, is quite different from syphoning fluid out, and unless the procedure is fully safeguarded by manometric readings, it becomes one of some danger. Where, however, it has been determined that the needlepoint lies in the pleural cavity, no difficulty is generally experienced in producing a limited pneumothorax. Subsequent injection of the gas in close proximity to the first region compressed, if the lung is collapsible, usually causes no difficulty, and with amounts of nitrogen varying from the initial 300 cc., increased up to 700 or 1000 cc., depending upon the amount of pressure considered desirable in the chest, will generally carry on the collapse of the lung to partial or complete obliteration of its air spaces.

The successful treatment of phthisis demands that there should be a steady, continued positive pressure in the chest as indicated by the manometer, and this should be the object of the operator after the inception of the treatment.

In most instances, the lower part of the lung lends itself more readily to compression, both on account of the anatomical arrangement of the chest, and because of the freer movement and the less frequent involvement of the lower lobes of the lung. Where the process is in the upper half of the lung, and nitrogen is inoculated into

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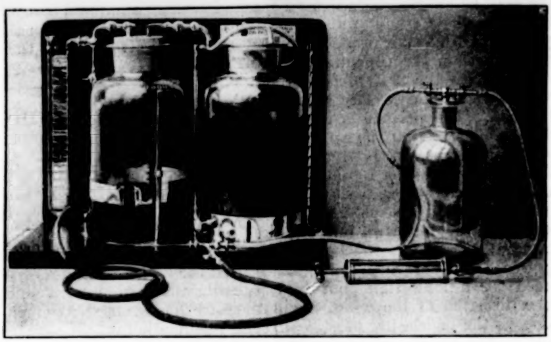
* Presented before the Framingham Medical Club and Community Health Station, Oct. 18, 1917.



PNEUMOTHORAX APPARATUS CONNECTED FOR ASPIRATION AND INFLATION.

the chest over the lower lobe, it is often surprising to see how rapidly transmitted pressure will effect the activity of a process at some distance from the direct point of application.

Among the workers in this field there seems to be an almost unanimous opinion that this therapeutic measure in all cases where it can be made applicable to any extent, is a beneficial measure, and the diminution of active signs and symptoms is often most gratifying, even where at times only temporary.

This has led many men to use the artificial pneumothorax as a palliative measure for the comfort of patients, even where no permanent effects are to be expected, and on this account in the tabulation of results obtained, the headings of permanent and palliative very commonly appear. It certainly can be said without fear of contradiction, that if this measure were of no other benefit than a palliative one, for the distressing symptoms of a hopeless case, its use is justified.

The difficulties and complications of the method are fairly well known. A few cases of pleural shock have been reported in the literature, but these have been far less numerous than would be expected where the method has been used by so many physicians. I have personally seen one such case. It would seem that in most cases this catastrophe might be avoided by the thorough cocainizing of the pleura and use of morphine, before nitrogen is put into the chest. The most common complication is the occurrence of a pleural exudate, either as an effusion or as pus. Between 40 and 50% of the cases sooner or later show effusions, which occasionally may become purulent. The effusion itself can readily be removed, and replaced with nitrogen, but an empyema is a much more serious complication. This latter condition is generally due to the entering of the effusion by micro-organisms from an extensively involved lung, or by the puncturing of the lung and subsequent infection of the effusion by the operator's needle.

Among the rarer complications are gas-embolism and accidental pneumothorax. The former has been observed by few clinicians, and while the latter is not rare, few cases have been reported. Beggs cites two such cases in his practice. Two real difficulties stand out in the use of this method, first, the occurrence of adhesions with more or less obliteration of the pleural cavity, and second, the difficulty of determining how long to continue treatment after all symptoms and active signs have subsided.

The increasing importance of the x-ray in this work is rapidly becoming recognized. Its chief value lies in determining the extent of the pneumothorax produced, the position of the collapsed lung, and whether or not a small effusion is present. Its failure to determine the presence of fine adhesions or areas of obliteration of the pleural cavity is a serious one, as this is the greatest handicap with which the operator has to contend. Stereoscopic plates, however, give promise of better results along this line.

In regard to the selection of cases for treatment, the original idea of Spengler still holds that the unilateral, non-adherent, tubercular lung is the ideal for this treatment. The majority of men, however, have used this method chiefly in the advanced case, and often as a last resort. Such cases occasionally show marked improvement, and as a palliative measure the treatment is justified. In most cases, however, cure is not to be expected, and it is here that all the difficulties and complications of the method are likely to arise. There is a growing feeling among phthisiologists that the method is applicable earlier in the disease than has hitherto been thought desirable, and if cure is to be hoped for through the use of artificial pneumothorax, it should not be limited to the advanced case.

In any case, no matter how early in the disease, where two or three months of good sanatorium treatment has failed to retard the advance of a tubercular process, this therapeutic measure should be invoked.

One of the greatest sources of failure to obtain better results lies in the fact that too often the collapsed lung is allowed to re-expand in too short a period of time.

In many cases where an arrest of the disease has been secured by this method, disaster has finally resulted, because of the failure to continue the compression of the lung for a sufficient period of time, even after all symptoms have subsided. In my opinion, re-expansion of a compressed lung should be allowed to take place very slowly, and only after all activity of the tubercular process has ceased, for a period of at least six or eight months.

As has been well said, statistics are of little value, because of the great individual variation shown by pulmonary tuberculosis. One thing, however, may be gathered from such figures as are at hand, namely, that one-third to one-half of the cases sufficiently treated have been classed in the group of "markedly improved or apparently arrested." Case for case, where the untreated, well marked consumptive is contrasted with similar cases that have undergone artificial pneumothorax, the results overwhelmingly prove this measure to be one of great value. The frequently quoted statistics published by Sachs, of the results obtained by American observers, show that about 50% were either improved or the disease arrested.

The results of Wolman and Hirshman show that the late results in a series of 141 cases gave about one-fourth as permanently benefited. The figures of Shortle show about 50% of his cases to have done well. Such results are general among many American observers and merely go to prove that in competent hands this therapeutic measure has an established place in the treatment of pulmonary tuberculosis.

If it is used only in the ideal case the results would be brilliant, but even where it has been applied as is generally the case among the most unfavorable and even hopeless cases of advanced phthisis, it has proved of more value than any other measure that we have at hand.

With increased experience and the restriction of this measure to sanitarium patients, as is gradually becoming the practice in this country, the results obtained will steadily improve, and no man who has the best interest of his patients at heart can afford to neglect artificial pneumothorax where other measures have failed.

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Original Articles.

TRANSFUSION. EXPERIENCES IN OVER TWO HUNDRED CASES.*

BY A. R. KIMPTON,† M.D., F.A.C.S., BOSTON.

I HAVE several times heard most excellent men say that they had never seen a patient who really needed transfusion. I have seen over 200 cases that did need it, for I have done that number of transfusions. Likewise, I have seen a patient die who I thought did not need transfusion, and die for want of it, although the death was sudden. All of these cases have arisen in the course of a general surgical practice, and many others have been seen as to the advisability of doing transfusion, that were deemed inadvisable.

No longer is transfusion a procedure of last resort, nor is it one of uncertain technical success. It is distinctly a definite surgical procedure, certain as to its performance, and definite as to its indications.

No matter what one's pet method of transfusion may be, he should remember that it is to Crile that the credit belongs for putting the technic on a surgical basis, and it is to J. C. Hubbard that I owe my interest in the subject, as assistant to him in the use of Crile's technic.

So transfusion now is a very definite surgical procedure, and has a very definite place in the treatment of certain medical and surgical conditions, as well as in the treatment of certain emergencies. Technical difficulties may be said to have been entirely overcome. Following the drive on new methods came the knowledge that there were other difficulties, such as agglutination, hemolysis, so-called anaphylaxis, and acute dilation of the heart. These, too, are now largely overcome by careful preliminary tests and care during the transfer of blood to the patient to avoid acute dilation of the heart. Nevertheless, the only death I have had directly due to incompatible bloods was from anaphylaxis, after most careful iso-agglutination tests had been done by a trained laboratory man. I will later speak further of blood tests.

Recently I have had a second death from the same cause, after careful tests had been made.

If one were to ask, "When is transfusion of value?" the answer might, roughly, be this:

In acute secondary anemia (acute hemorrhage), yes.

In chronic secondary anemia, yes.

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* Read before the Massachusetts Homeopathic Medical Society, Lawrence Medical Society, and Essex South Medical Society.

† PREVIOUS PUBLICATIONS ON TRANSFUSIONS:
Kimpton, A. R., and Brown, J. Howard: A New and Simple Method of Transfusion, Jour. A. M. A., July 12, 1913, p. 117.
Kimpton, A. R.: Further Notes on Transfusion by Means of Glass Cylinders, Jour. A. M. A., Nov. 1, 1913, p. 1628.
Kimpton, A. R.: Transfusion by Means of Glass Cylinders, BOSTON MEDICAL AND SURGICAL JOURNAL, Nov. 27, 1913, pp. 783-786.
Kimpton, A. R., and Brown, J. H.: Technic of Transfusion by Means of Glass Tubes, BOSTON MEDICAL AND SURGICAL JOURNAL, Sept. 16, 1915, pp. 425-427.

In acute primary anemia, such as acute leukemia, no.

In chronic primary anemia, such as pernicious, yes.

It is in the massive, acute hemorrhage that transfusion is of the greatest value, and it is in these cases that one gets the most pleasing results,—often almost miraculous. It is at least most dramatic to see a patient the picture of death,—cold, pulseless and unconscious,—return to consciousness with a good pulse and color, by means of a prompt transfusion. Not all cases get as far as that, but I have seen just that a good many times.

For massive, acute hemorrhage I have done some fifty transfusions, not including hemorrhage of the new-born, or hemophilia. Of these there have been 17 deaths, and several of the deaths were because of complications existing besides hemorrhage, such as malignancy, sepsis, nephritis, etc. When one considers all these cases were seen in consultation because of great hemorrhage, the results are especially gratifying. The hemorrhages were from very varied sources, such as post-operative hemorrhages, rupture of ectopic pregnancies and spleens, uterine fibroids, post-partum hemorrhage, hemorrhages from that most dangerous operation—tonsillectomy—and hemorrhages from stomach, etc. In fact, hemorrhages from almost every organ in the body have been seen and the patients transfused. Great care must be taken in these massive hemorrhages not to give too much blood, unless assured that the bleeding vessel is secured when the vessels may be filled; otherwise Nature's means—lowering of blood-pressure—of stopping the bleeding will be defeated.

The average amount of blood transfused in the acute hemorrhages is 800 to 1000 cc., although more is at times given, but rarely is more than 1000 cc. necessary. If the bleeding is not secured, as a rule not over 500 cc. is given.

I have transfused and immediately operated upon fourteen cases in this group of acute hemorrhages. All were critically ill and, with two exceptions, all recovered. Several others were operated upon by other surgeons either while I was doing the transfusion, or immediately afterwards. These cases were mostly hemorrhage from the stomach, ruptured spleens, ruptured ectopic pregnancies, ruptured arterio-venous aneurysm, uterine polyp, or fibroid, and gunshot wound of the abdomen. The results obtained in each case would be well worth while enumerating, but too much time would be taken. Suffice it to say that there is nothing more pleasing to the surgeon than the successful outcome in such critical cases. The bleeding from all except the stomach hemorrhages is of definite origin, but it should be emphasized that not all massive hemorrhages from the stomach are by any means intra-gastric or intra-duodenal in their origin. Without question, many of the cases labeled hemorrhage from ulcer of the stomach or duodenum are splenic in origin, and splenectomy saves such cases—to say nothing of those from rupture of an esophageal varix.

Seldom will a patient die following a single gastric hemorrhage, but it is such repeated hemorrhages that are to be feared. These cases transfused and immediately operated upon have a decidedly better chance of life than when treated medically. The medical men might ask: "What assurance have you that you will find the bleeding point?" I can only answer that I have a much greater chance of finding the bleeding point than has the medical man. Furthermore, I believe that the hemorrhage in many of the cases operated upon and no evidence of ulcer found, but a somewhat enlarged spleen found, to be of splenic origin. At the same time there are small gastric ulcers involving only the mucosa and giving no serous surface evidence of ulcer that do cause massive hemorrhage. Usually the hemorrhage, if of intra-gastric origin, is accompanied by a gastric history. Illustration: A woman sixty-five years old, with a gastric and duodenal history covering fifteen years, with several hemorrhages, was seen in consultation because of massive gastric hemorrhage. Patient pulseless, with almost no capillary reaction, was transfused with 500 cc. of blood. Warning of repeated hemorrhage was given, and further surgery advised but refused. The patient's response to transfusion was most satisfactory, but five days later the hemorrhage was repeated. This time the patient was apparently moribund when seen. A second transfusion was rapidly done, giving 800 cc. of blood, and this immediately followed by a laparotomy consisting of a posterior gastroenterostomy, and the turning in of an ulcer just beyond the pylorus. This patient is entirely well, sixteen months later.

I could mention a good many similar cases, but this will suffice to illustrate the point. A good many times I have transfused and immediately operated upon patients suffering from ruptured extrauterine pregnancy with recovery in each case. These have all been cases in a most critical condition. To be sure, the hemorrhage of most extrauterines has stopped when operated upon, but they can be brought to a normal condition much more quickly and operated upon much more safely with transfusion than without.

Under certain conditions the blood free in the abdominal cavity can be filtered and used to transfuse the patient. This is likewise true of blood in other cavities of the body. I have had no occasion to take advantage of this procedure, as donors have always been available. Nevertheless, it should always be remembered as a useful procedure.

One might ask: "How do you decide whether or not a patient needs transfusion?" I depend largely upon my experience with such cases,—their appearance, pulse, and capillary reaction, together with their hemoglobin and diastolic blood-pressure. Any patient with a diastolic blood-pressure getting down to fifty or less because of hemorrhage is in a dangerous condition. The amount of blood lost and the time consumed in losing it is of marked importance, for a sudden hemorrhage is much more serious than a slow hemorrhage of greater amount. It is not always easy to decide, but, provided sufficient blood tests have been made, it is safer to transfuse border-line cases. They will recover much more quickly, will be more resistant to infection, and less liable to further hemorrhage. This was brought home to me forcibly by having just such a patient die without transfusion, and I believe this was an error of judgment on my part. This patient had had severe hemorrhage from a complete placenta previa, had been delivered, and was seen in consultation as to the advisability of transfusion. She was improving rapidly, and although much blood had been lost, I advised against transfusion, when she suddenly became worse and promptly died. She might have died anyway, but I believe a transfusion, judicious in amount, might have saved her life. Only the preceding week I had seen an almost identical case following difficult delivery, and advised against transfusion, with prompt recovery. I have seen a considerable number of such cases and advised against transfusion, with recovery of all patients except the one mentioned.

Nevertheless, large hemorrhages due to placenta previa are always, in my opinion, safer with transfusion than without, especially when a considerable amount of blood has been lost suddenly.

A patient suffering from acute hemorrhage,—cold, rapid, thready pulse, or pulseless, white, sometimes cyanotic,—successfully transfused, improves markedly in color, with return of pulse or decrease in its rate, with increased red cells and hemoglobin, with sense of warmth and often hunger,—in other words, either a return to the normal, or an approach to it. I have seen several patients cyanotic, noticeably in the forearm, before they became pallid, and have remarked that the patient is bleeding rapidly. This probably is due to increased heart beat and delay of venous return, and is more often seen in the larger rapid hemorrhages. Much more I could say concerning transfusion in the treatment of acute hemorrhage, as it is its greatest field of usefulness; but enough of acute hemorrhage.

SECONDARY ANEMIA.

Here again one finds a most suitable field for transfusion, and in this group there have been 15 transfusions in 12 patients, with three deaths. Of the deaths, one was secondary anemia arising from actinomycosis. Another death was due to a later operation for gallstones. The patient was apparently dying before transfusion, was deeply jaundiced, and much improved by the transfusion so that operation could be attempted. A few days later she was operated upon and stones were found not only in the gall-bladder and ducts, but many in the liver itself. It seems hardly fair to include this as a death on my list of transfusions; nevertheless, I include it. The third death was the result of intestinal obstruction following an operation for a pelvic abscess of long duration. So one sees that transfusion itself really has no mortality in secondary anemia, and does put patients in a condition to receive surgical benefit, when without transfusion it would have been, to say the least, very dangerous, if not fatal, to have attempted surgical interference.

Not uncommonly one sees a patient who has been bled out by constant or frequent small hemorrhages from one source or another, such as from ulcers, uterine polyps, and so forth. These cases are readily put into shape for operation by transfusion, and transfusion is usually best performed before the operation, although the milder cases may be operated upon first and a transfusion done immediately afterwards, if necessary.

The cases of secondary anemia coming about from Banti's symptom-complex are often most successfully transfused, either before or after splenectomy. When removing large spleens, one should take care to tie the splenic artery first rather than tying the pedicle as a whole; otherwise a large spleen may be removed full of blood, and an acute hemorrhage, to all intents, caused. In reality there is no mortality in secondary anemia because of transfusion, and, as stated above, there should be no mortality from transfusion in itself at any time; this with a very rare exception.

HEMORRHAGE OF THE NEW-BORN.

These cases are, of course, acute hemorrhage, but have been grouped as entirely by themselves. There is no condition where transfusion gives better results. It is specific in its action and nearly every case will recover provided one has not delayed too long and that the hemorrhage is not due to congenital defect of the bile passages. Even the majority of the cases seen very late will recover with transfusion.

As to what cases of hemorrhage in the newborn should be transfused, it has been my experience that any baby having had a hemorrhage, large enough to show it clinically, is safer transfused than not, for such an infant is very liable to have further hemorrhage which may suddenly prove fatal. Furthermore, any infant having had two or more small hemorrhages, whether or not they show it clinically, are safer transfused, for one never knows when such an infant may have a fatal hemorrhage. It takes but a small amount of blood to transfuse a new-born baby,—from 60 to 120 cc.

The method of transfusion in new-born babies is now not difficult because of the use of the infant's longitudinal sinus, as brought out by

Helmholz. This technic I will describe later. I have several times met with hemorrhage of the new-born in which the longitudinal sinus could not be used because of great hemorrhage into the scalp, but even so, *it may be used by feeling one's way into the sinus with a longer needle.* Under these circumstances the external or internal jugular vein is by far the most suitable. I have records of 28 such cases consisting of 30 transfusions. In 12 the longitudinal sinus was used. Six of these babies died: the others, many of which were seemingly moribund, are still alive. Those which died were cases seen very late, with the exception of two, one of which showed congenital malformation of the bile ducts at autopsy. This baby had most profuse hemorrhage, which immediately stopped following transfusion. Ten days later the child began to bleed, and transfusion again stopped the hemorrhage; another ten days and the same thing happened, and this time death followed. Another death came suddenly twenty-four hours after a most dramatic immediate recovery from hemorrhage. No autopsy was done.

I have never seen a reaction of any kind following transfusion in new-born babies, probably due to the fact that the blood of infants does not, as a rule, become grouped until the end of the second year. With only two exceptions, I have used the father as donor. In these two exceptions the mother was used. My clinical experience makes me feel that it is safe to use the mother, and probably the father, as donor. Other men's experience may have been different. The offspring of sensitive mothers are also sensitive for a short time; therefore, one should not get a reaction from injecting a baby with the blood of its mother.

To be sure, there are other methods of treatment, such as serum therapy, that are efficient in many cases. At the same time, to my mind, there is nothing so satisfactory as transfusion for severe cases. Nearly all of the serious cases had had serum in some form.

HEMOPHILIA.

Transfusion cures the attack, but does not cure the disease, and in severe cases will often prove life-saving. No one can say as to the length of time the patient will be free from hemorrhage.

The donor of the patient should not be a relative. Nevertheless, the mother's blood is not necessarily counter-indicated, for although hemophilia is transmitted by the mother to the son, this hereditary character may be transmitted in the germ cell rather than by the maternal blood; hence, the transfusion of a hemophiliac with mother's blood is not counter-indicated, provided agglutination tests are carried out. I have had one satisfactory experience in using the mother as a donor.

SHOCK.

On the grounds that shock is really hemorrhage into the abdominal veins, transfusion, theoretically, should be an ideal treatment, and many men state that it is such. Yet, in my own hands, it has been disappointing, and I think it is only fair to state that there is no reason why the blood transfused should not further distend the already distended abdominal vessels, as there is no reason to expect this blood to have any effect upon the cause of the condition we call shock. If the cause of shock is fat embolus, as claimed by some, then certainly transfusion can be of little value. However, cases of so-called uncomplicated shock, with a diastolic blood-pressure down to fifty or less, may be greatly benefited by prompt transfusion. When taking the diastolic pressure in these cases, one should look for aortic regurgitation, as such cases may have little or no diastolic pressure to start with. Of course one sees cases with predominating shock brought about by hemorrhage not necessarily large, but usually sudden. Here the situation is entirely different and transfusion is of great value, for it replaces the blood lost, thereby removing the initial cause of the shock. Much more might be said on this subject of shock. One case will illustrate:

A brakeman, run over by a freight train, with loss of both legs above the knees. The amount of blood not large but suddenly lost; patient seemed to be suffering from extreme shock brought about by the sudden loss of a comparatively small amount of blood. Patient was *in extremis,* but responded at once to a prompt transfusion, and made an uneventful recovery.

SEPSIS.

Concerning transfusion in the treatment of acute sepsis, and in this I include the acute purpuras, I will frankly state that I see no place for it, as the blood transfused promptly becomes septic itself, and all of my cases done for acute sepsis have died. But those cases of prolonged sepsis, with a resulting secondary anemia, may be much benefited by transfusion, thus raising their resistance. Whole blood in itself is somewhat bactericidal as well as hemostatic. In such cases there is a large field for the immunization of the donor to the infecting organism and repeated small transfusions from this donor.

GAS-POISONING.

In this group I have had but one patient upon whom two transfusions were done, but without success. Here transfusion should be of great benefit, for the condition is analogous to an acute hemorrhage, in that carbon monoxide combines very readily with the red cells,—much more so than does oxygen. Therefore, the oxygen carriers of the blood are as effectually removed from the circulation as by hemorrhage. By transfusion you supply normal red cells and so benefit the patient. These cases should be bled at the time of the transfusion; their blood clots easily, and bleeding may be difficult, but if the patient is used as though a donor, the tube may be filled, removing as much blood as desired without difficulty, and then transfused into the same vein. Transfusion for these cases is seldom taken advantage of, and yet it is the proper procedure in severe cases, and should be done promptly. It is hard to impress medical men of this fact, and the cases continue to die on the medical side of the hospital without even trying transfusion, usually because no donor is available.

TYPHOID FEVER.

Occasionally transfusion is of value in hemorrhage arising from this disease when the patients are not too septic, and it is of value occasionally in eclampsia.

PRIMARY ANEMIAS.

First, the more acute primary anemias, such as acute lymphatic leukemia. Here transfusion is of no value, except possibly to prolong life a variable length of time, a matter of a few hours to a few weeks, as a rule. I have transfused one case of this type nine times at ten to fourteen day intervals, literally keeping the patient alive for four months. Nevertheless, except in rare instances, it almost seems unjustifiable to transfuse these cases. Needless to say, it should never be done without a most careful explanation of the situation to those concerned.

Second, concerning the use of transfusion for the more chronic primary anemias,—pernicious anemia. We know that transfusion, like all other treatment, is of no permanent value; but repeated transfusions in this condition will, without question, prolong the patient's life. We see remissions in pernicious anemia, both without treatment and with medical treatment, but this improvement is usually gradual. A remission brought about by transfusion usually takes place by crisis, whereas a medical remission comes about by lysis.

I might sum the situation up in this manner, —that in *my opinion* transfusion alone offers as much for pernicious anemia as splenectomy with or without transfusion, and does not carry with it any of the dangers that splenectomy carries. I am further of the opinion that splenectomized cases later requiring transfusion do not respond to the transfusion as do cases not splenectomized. I am in accord with the fact that this does not agree with the opinions of other observers. Nevertheless, this has been my observation, and it now seems *to me* that end results of splenectomy hardly warrant the operation. To be sure, the procedure has only been on trial. Personally, I think that my results with transfusion alone for this condition are as good as those with splenectomy, and that the remissions have lasted as long, or longer, and, what is more important, there has been no immediate death, and, with rare exception, very marked improvement, but always variable as to the time this improvement has lasted, the time being from a few days to nearly two years.

I am fully aware that I have said nothing concerning the treatment of pernicious anemia that has not been duplicated by medical treatment. Nevertheless, such results are found only in a few scattered cases. I have observed several times following repeated transfusions for primary anemias that finally a severe reaction of one sort or another has taken place, both when the same donor has been used, and when a different donor has been used. These patients have then died within a few days. I have never seen this occur until four or more transfusions had been done. Similar phenomena have also been observed at times when not preceded by transfusions, as an end result of the disease. I cannot give it any explanation; but this should be remembered in doing repeated transfusions for pernicious anemia. I can only repeat that transfusion offers more for pernicious anemia, although this is little, than any other form of treatment, and that it usually brings about a remission by crisis, whereas medical treatment or no treatment brings about a remission by lysis. Frequently there is a red cell storm, the red cells going to eight million or more. The benefits of transfusion for pernicious anemia are not to be judged by red cells and hemoglobin, but by what the patient can do following the transfusion. Care should be taken in the amount of blood given for pernicious anemia, for too much blood may cause plethora and an aplastic state, rather than stimulate red cell production.

"Has transfusion any dangers?" Its dangers are, first, acute dilation of the heart, which can always be avoided by care in the carrying out of the operation. Its other dangers are those of serum reaction and so-called anaphylaxis. These can usually be avoided by careful preliminary blood grouping or iso-agglutination tests. Skin reactions will help in avoiding anaphylaxis.

"As to the donor, who shall it be?" It is not at all necessary that it be a relative, but it should be a healthy, robust person, free not only of a postive Wassermann, but also free of clinical signs of syphilis. Likewise one of compatible blood, as determined by careful preliminary tests, which should always be done, except where time precludes these tests. Even in the most urgent emergencies, agglutination tests may be done within 20 - 30 minutes.

METHODS OF TRANSFUSIONS.

As to methods of transfusions, there are many, and it was soon after the publication of the method to be described that many other methods were published, some of them closely resembling this method, but leaving out essential features. No one of these methods has been an improvement, in my opinion, upon this method

It meets the requirements of any case and under any circumstances. Any method that is so flexible as to allow transfusion in an attic room without an assistant, or to be done with the operator, recipient and donor all on the same bed, or under circumstances requiring donor and recipient to be in different rooms, leaves little to be desired.

Nevertheless, one can best do transfusions by making himself familiar with whatever method best suits his purposes, and this means making himself familiar *with details*, and not the evident things of the technic.

As to the *citrate method*, I will only state that originally Mr. Brown and myself discussed the use of the citrate method as it has been used in laboratories for years, but saw no reason for using it with this method. It seems to me that for certain cases, citrate transfusion defeats its own purposes, and so far as I have observed and can learn from reading, reactions of more or less severity, such as chills, are decidedly more common following citrate transfusion than following whole undiluted blood transfusion. Furthermore, massive transfusion of citrated blood may be dangerous, for whereas the percentage may be low, the total quantity of citrate in massive transfusions may be considerable. In only three cases where iso-agglutination tests had been done were there any reactions of note. In fact, even the slightest reaction has been rare, and I believe the method used is in some part responsible. I do not mean to say that slight reactions never follow. Blood may be injured as well as soft tissues; blood is simply more liquid. I am under the impression that drawing blood through needles of comparatively small bore and then forcing it through needles into the patient must to some extent injure the blood, and thus be more liable to cause reactions, although these may be slight. Without doubt, citrate methods have their place, and it is for the individual man to choose those suitable for his purpose, as previously stated.

PARAFFINING THE TUBES.

This really amounts to filling partially the warm tube with sterile paraffin, allowing a little to run out the cannula end, and running the remainder back into the receptacle, through the side tube. In detail, the tube is wrapped in a towel and sheet wadding, sterilized in an autoclave, and the paraffin mixture is sterilized either by boiling in a water bath or in an autoclave. (Vincent's mixture, stearin, paraffin and vaseline, in the proportion of 1-2-2, or 54-degree paraffin may be used as well.) Personally, I always keep my tubes paraffined, ready for use, and they are paraffined by a nurse. Having scrubbed up, some one lays open a sterile package containing the tube, the paraffin is kept melted in a water bath, and the tube is moderately heated over one or two alcohol flames. (Not too hot; I find that a Bunsen burner is too hot.) Then remove the cork and nearly fill the tube with the melted mixture,—the more the easier to do. Allow this melted mixture to run around inside the tube and over the surface of the cork, and a little to run out of the cannula end. Then turn it upside down in such a way as to allow all the paraffin to run back into the tube and out the side bar into the paraffin jar. If there is difficulty in the cork not fitting securely, remove the cork and cover with a piece of gauze, trimming away the outside edges of the gauze. With a teaspoon or medicine dropper seal the junction of the cork and glass on the outside with paraffin. It is much better and easier to let the paraffin run back out of the cannula into the tube than to draw out the last drop from the cannula with a piece of gauze, as first described. Take an alcohol sponge and rub over the tube so that it may cool more quickly.

The tube is now replaced in the sterile package and pinned up, ready for use. I always clean my own tubes, and there is no necessity for breaking them. However, should a cannula happen to be broken, it can be repaired.

CLEANSING THE TUBES.

If you have very hot running water, the tube can be cleansed with the greatest ease. If you allow the blood to stand in the tubes, or if the tubes are left in water, cleaning will be difficult. When through with the transfusion, have steaming hot water from the tap run through the tubes. I do this before removing my gloves. First, allow the water to run through the cannula end, so that the paraffin melts and carries the blood back with it into the tube. The cork being removed, the water is allowed to run out. The rest of the paraffin is cleaned out in the same manner. Then, pouring in some tincture of green soap with hot water, shaking the tube and afterward rinsing until the tube is clean, is all that is necessary. The tube is then pinned up, ready to be re-sterilized.

Having the tube sealed with glass at the large end is a distinct disadvantage. This was naturally one of the first things discussed by the originators, and was cast aside as complicating the cleaning and paraffining of the tube. After a very extensive experience, I find no reason for changing the tube as originally designed.

A most satisfactory way of bleeding patients is with this tube, using the patient as a donor, allowing the tube to fill, emptying through the cork end by depressing the tube without removing the cannula from the vein. This process is repeated until as much blood as desired is removed. It is not at all necessary to cut down on the vein for this, but a needle may be attached to the cannula.

Although it is not necessary for patient and donor to be close together, and in many cases they should be separated because of infection, and so forth, it is a distinct advantage to have a precise arrangement under most circumstances.

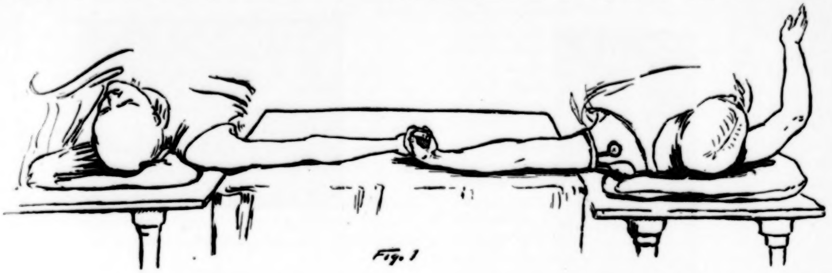

Fig. 1

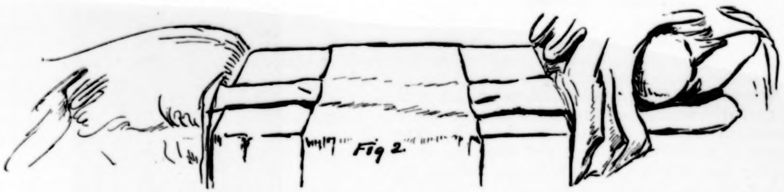

Fig 2

The most convenient method of arranging and draping the patient is shown in Figs. 1 and 2. If using the donor's left arm and the patient's right arm, the operator should stand on the side of the table towards their heads. If using the opposite arms, he should stand on the opposite side of the table. In this way the operator will not work left-handed in the handling of the tube. To be sure, one may use the same arms, or any arrangement desired, but the arrangement described is decidedly the most efficient. The arms are cleaned with soap, water and alcohol, rather than with iodine, which obscures the veins. A tycos blood-pressure band is placed high and *upside down* on the donor's arm, as shown in Fig. 1. The diastolic pressure of the donor has previously been determined. When filling the tube, the blood-pressure is kept a little below the diastolic pressure. For illustration: If the diastolic pressure is 70, the blood-pressure is kept at 60 to 65. The air is let out of the band when not filling the tube. This gives absolute and scientific venous congestion. A rubber tube may be used as a tourniquet, but it is frequently put on too tightly, and if used, should be applied just tight enough to give venous congestion and not arterial obstruction. (This use of the tycos band has previously been published. There is no method so efficient of obtaining Bier passive congestion, the showing up of varicose veins and other things, as this manner of using the tycos band.)

Briefly, the method consists of inserting the cannula of the tube into a vein, allowing it to fill, removing and inserting the cannula into the recipient's vein, and emptying the tube by air pressure. This may be done either by open exposure of veins or by needle attachment. In minute detail, the technic is as follows: The skin over the veins just below the elbow in the arm of the donor and recipient is injected with novocaine. The veins are exposed cleanly through incisions not over one and one-half inches long. Longitudinal incisions, if the veins are easily visible, if not, a transverse incision, will more readily expose the vein. For this I use merely a knife and small blunt-pointed scissors, passing the points of the scissors along each side of the vein, then under the vein, and spreading. A ligature is placed within the blades, pulled through and cut, exactly as for intravenous salt-solution. The diastolic blood-pressure as described is now established. The donor's vein is now tied off proximally, and the distal ligature is left to be used as a clamp by merely raising it a little after the vein is opened. If there is no assistant present, the weight of a hemostat hanging from the ligature will control the vein.

The donor's vein is now transfixed by a cataract knife and a slit made (Fig. 3). The cannula of the tube is inserted into the vein of the donor for about one-half inch to one inch and held upright until filled by venous pressure (Fig. 4). This usually takes not over two

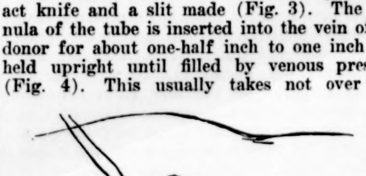

FIG. 3.

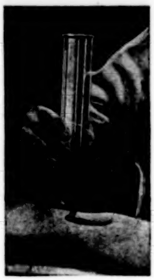

Fig. 4.

minutes for a 250 cc. tube. If not filling well, it probably means that the end of the cannula is against a valve or the side of the vein. The donor is instructed to shut and open his hand tightly and slowly. This, perhaps, hastens the inflow.

While the tube is filling, the vein of the recipient (without the aid of any tourniquet) is tied off distally, the proximal ligature being used as a clamp, and the vein opened. By this time the tube is full, and, the air-pressure having been released, is withdrawn and held on its side with the side-tube uppermost, to prevent the blood from running out. (Thumb over end of side-tube, finger over cork, Fig. 5). The cannula is now inserted into the vein of the recipient and held in an upright position. (Thumb under side-bar at junction with cylinder, finger over cork, Figs. 6 and 7). Be sure the vein of the recipient is bleeding before inserting the cannula. The little angular forceps I have had made are a great aid in introducing the cannula into the vein, especially when the lumen is small. (Figs. 6 and 8.) An actual cautery-bulb is attached to the side-bar, and by a little pressure the tube is emptied. (Fig. 7).

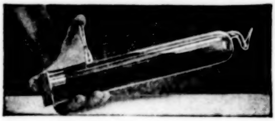

Fig. 5.

If one should not observe the manner of holding the tube as shown in the illustration, and by any accident the cork should fall out, the palm of the hand should be held over the tube.

The cannula is withdrawn while there is still a little blood left in it. More tubes may be filled and emptied, if desired, using the same veins, or the same tube may be used over and over, first rinsing it out with cold sterile salt solution. It is better to point the cannula toward the hand of the donor rather than toward the heart, though both ways may be used. The veins are usually tied and cut, but if desired the slit may be sutured. If, for any reason, arterial blood is to be preferred, the radial artery of the donor may be used, as was originally done.

I have sutured and used the same vein in both donor and recipient four times, finding it patent each time. When exposing the vein, its direction should be noted, and *one cannot expect the tube to fill if the pump is attached while*

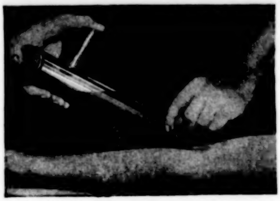

Fig. 6.

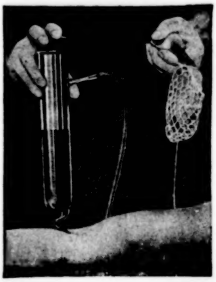

Fig. 7.

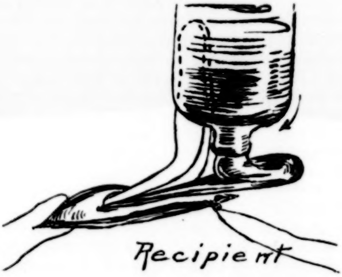

Fig. 8.

the tube is inserted in the donor's vein. Many other veins in various parts of the body may be used.

I have several times transfused patients by pointing the tube toward the hands, that is, injecting the blood against the circulation. In no case was there any evidence of congestion of the hand. This seems to me to be another argument that circulation is not reversed when an arteriovenous anastomosis is made. For, if it were reversed, it would seem to me that the hand would become somewhat congested when 250 to 300 cc. of blood is injected in this manner below the elbow.

A criticism of this method has been that it requires a short incision over the veins. This is not at all true, as I published in May, 1915, that the tube could be attached to a needle in suitable cases. Personally, I prefer a short thick-walled rubber tube connection, when using a needle, rather than have metal in connection with the glass. (Fig. 9). By this means I have filled five tubes without once removing the needle from the donor's vein. The recipient's vein will usually require incision. *It is not at all necessary to paraffin or prepare in any way the needle and rubber tube connection, except to boil them and moisten with a little salt solution or sterile water just before using.* I have frequently filled the same tube two or three times without washing the tube with sterile salt solution. However, I prefer to use a clean tube for each tube full of blood desired.

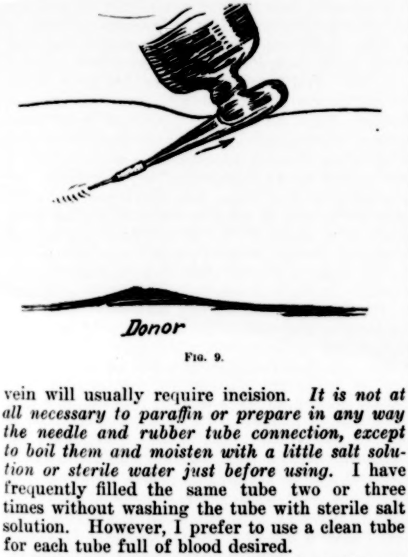

FIG. 9.

The tubes should always be kept sterile and paraffined ready for emergencies. Several times I have done three transfusions in one day, and on one occasion four transfusions, so that the necessity of keeping plenty of tubes ready is easily seen.

As to the technic for new-born babies, the tube is filled with 100 to 150 cc. through a needle inserted into the donor's arm. (Fig. 9). Another needle is passed into the longitudinal sinus of the baby through the posterior portion of the anterior fontanelle (Helmholz), the needle in line with the sagittal suture. Its entrance into the sinus is determined by the escape of blood through the needle. The baby's head being held firmly, and the needle being held firmly, the tube full of blood is now connected to the needle, and with gentle pressure the amount of blood desired is injected. This should be done slowly, so as not to increase intracranial pressure. The tube is now detached from the needle and the needle removed. Very slight pressure will stop any oozing from the sinus. This whole procedure takes not over three to five minutes. As spoken of above, there will be times when this most simple procedure cannot be used. In these cases, the tube is filled with the needle connection as described, and either the external or internal jugular vein of the baby is used. Using the internal jugular is much easier than one would expect in practically all cases, although in such cases the technic is much more difficult.

TRANSFUSION CONCLUSIONS.

Transfusion may be said to be of value as follows:

Its greatest field of usefulness is for,

1. Acute secondary anemia, that is severe hemorrhage. For so-called "shock," uncomplicated by hemorrhage, it may be of great value, but too much has been claimed for it here. For hemorrhage of new-born babies, transfusion is specific and the use of the longitudinal sinus, as advised by Helmholz, is one of the most valuable advances of surgical technic. The tube is filled through the needle and emptied into the longitudinal sinus through the needle. For hemophilia transfusion is specific for the attack.
2. Chronic secondary anemia, frequently of great value. It is of no value in acute sepsis.
3. Acute primary anemia, such as acute leukemia, it is of no value.
4. Chronic primary anemia, such as pernicious anemia, of value, but only temporarily, and for variable length of time.

For pernicious anemia it is the most efficient method of treatment we have. Transfusion alone offers as much for pernicious anemia as splenectomy with or without transfusion, and carries none of the dangers of splenectomy. It usually brings about a remission by crisis, whereas other remissions come about usually by lysis, that is, slowly.

Reaction rarely follows transfusion of whole undiluted blood in my hands.

Reactions are very common after transfusion of citrated blood. Massive transfusions of citrated blood may be dangerous, for whereas the percentage may be low, the total quantity of citrate in massive transfusions may be considerable.

BLOOD TESTS.

Wassermanns, especially of donor's blood, should be done when time allows.

Iso-agglutination tests should always be done, best in laboratory, between fresh bloods. Stock sera may deteriorate.

Transfusion without these tests may cause deaths, and even with these tests I have twice seen agglutination, the tests having been carried out by trained men.

In other words, there are undoubtedly serum reactions that we as yet do not know tests for.

A rough but fairly accurate bedside test may be carried out as follows:

Donor's blood.

1. 2 to 3 drops + oxalate (½%) or salt solution equals corpuscles.
2. 2 to 3 drops + distilled water equals serum.

Recipient's blood.

3. 2 to 3 drops + oxalate (½%) or salt solution equals corpuscles.
4. 2 to 3 drops + distilled water equals serum.

The oxalate or salt solution keeps the corpuscles free.

The distilled water lakes the corpuscles and gives serum.

On a hanging drop slide,

One drop of number (1) is added to one drop of number (4).

This gives donor's corpuscles to recipient's serum.

The same with (2) and (3) gives donor's serum to recipient's corpuscles.

These are observed for from 20 to 30 minutes, with microscope or hand lens, for clumping. If marked, this may be seen with the naked eye.

Blood tests, I believe, are not necessary for new-born babies, as bloods are not usually grouped until the child is about two years old.

Reactions are more likely to follow repeated transfusions, especially after four to five transfusions have been done and whether with the same or different donor.

I understand that transfusions at the front are not being done when urgently needed because of difficulty in having blood tests carried out. I should never hesitate to do a transfusion under such circumstances, for many more patients will be saved by doing the transfusion without blood tests than will be saved by not doing a transfusion with blood tests.

I wish to close by quoting a remark made by Dr. Crile several years ago: "Judiciously employed, transfusion will surely prove a valuable, often a life-saving, resource; injudiciously employed, it will surely become discredited." And I add that the reputation of transfusion is now too firmly established ever to be discredited.

THE SURGICAL TREATMENT OF EMPYEMA.*

By Wyman Whittemore, M.D., F.A.C.S., Boston.

During the last five years I have been especially interested in thoracic surgery, and what I have to tell you tonight about empyema is based entirely on my own work at the Massachusetts General Hospital. My ideas of the correct surgical treatment of empyema have changed so much during this last year that this paper is based almost entirely on last year's work.

I shall limit myself to the surgical treatment of empyema,—not going into the signs, symptoms or causes. I shall avoid statistics as much as possible, believing that a man's impressions from doing a considerable amount of work in a certain subject are about as valuable, if not more so, than his statistics.

The old operation for acute empyema was an exceedingly uninteresting and simple one. But there was a mortality of about 20% following operation, and 20 out of every 100 patients that left the Mass. General Hospital alive became chronic cases. These figures may seem very high, and I believe they are higher than those in private practice. But a hospital patient, as a rule, does not have the diagnosis made as early or the operation done as soon as a private patient. And private patients, being in better circumstances, are able to carry out their convalescence with more care. I do not think these figures are extraordinarily bad when compared with those of other hospitals. Although I have not looked up this question very carefully, the mortality at one large New York hospital is at least 20%, and at another hospital not far from here, it is about 29%. However, these figures were bad enough to arouse considerable desire to better them, and with each effort to improve our results, the subject has become more interesting.

There is no question but that the old way of excising a rib, will, with good after-treatment, cure many patients, but the correct rib must be taken out and drainage established at the bottom of the cavity,—sometimes it is necessary to take out a second rib. When I do this operation at all, which is only very occasionally, I open up the pleural cavity between the ribs, put my finger in, retracting the ribs if necessary, and explore the cavity; drainage is then established at the bottom by excising a section of a rib. This can be done very rapidly and accurately with one finger inside the pleural cavity. It avoids taking out an extra rib, gives one a good idea of the extent of the cavity, and also establishes perfect drainage.

The danger following this operation (granted the patient does not die) is that the lung will not fully expand, become covered with a pyogenic membrane,—and then the case is chronic. It seems possible, and indeed very probable, that one important cause for the lung not expanding fully is that positive pressure is allowed to enter the chest through the drainage tube. In order to overcome this, patients were put on "blow-bottles,"—but few, if any, patients are in condition to use these during the first forty-eight hours after operation,—and this gives the lung an excellent chance to become adherent in a partly collapsed condition. And this is granting that the lung is not already partly collapsed at the time of operation. Once the lung is in this condition, with a thickened visceral pleura covered with a thick pyogenic membrane, I have never seen "blow-bottles" do much good. The convalescence is often an exceedingly trying and obscure affair to the surgeon. A patient will do very well, with normal temperature for a week or ten days, and then suddenly the temperature will go to 102 or 103. We formerly asked the help of the medical man to solve this condition, and every time that I have done so he has reported that the chest has not been drained sufficiently and that there is a collection of pus not draining. Taking his word as law, I used to do a second operation, but usually found an old cavity surrounded with a thickened membrane which was draining perfectly. There are various explanations of this condition, and one man's guess is as good as another's, and I frankly don't know just what does take place. There have been many devices made to form a valve that would prevent the positive pressure entering the pleural cavity. At one time a rubber dam was arranged over the drainage tube, again the use of a flap of skin was tried, but without success, at the Mass. General Hospital.

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* Read at the Mid-Winter Meeting of the Brookline Medical Club, February 4, 1918.

On the other hand, the following method has been used in the *desperately* sick cases with much success. Under local anesthesia the chest is aspirated between the ribs with a very large trocar; a tight-fitting catheter slipped through this and the trocar removed. The catheter is attached to a long rubber tube that goes into a bottle half filled with water. The end of the tube is under the surface of the water. The catheter is sewed tightly into place. In this way the negative pressure in the pleural cavity is not changed, and with each expansion of the lung the pus is forced into the bottle. The catheter will stay tight with the chest wall for about a week. The amount of drainage for each 24 hours is measured. At the end of five or six days, an electrical suction apparatus is attached to the tube. This works constantly, and when the 24-hour amount of pus is down to 2 oz., I remove all drainage apparatus.

This method will probably cure the very early cases, in which there is only a cloudy serum containing a high leucocyte count, but in the cases in which there is thick pus and lymph, and where the lung is partly collapsed, it is not done with the idea of curing the patient, but of tiding him over his desperate condition.

I have done a good many cases in this way—2 have died—(both desperately sick cases before operation) one a woman with double pneumonia and a streptococcus empyema, who died four or five hours after operation, and one an infant less than a year old, who had a double bronchopneumonia, and who pulled the tube out. One case became chronic as I was unable to do a second operation owing to the patient's having syphilis.

In the cases *not so desperately* sick the Lilienthal operation is the one of choice. In this operation a very long incision is made between the ribs—one extending from close to the vertebral column to within an inch or two of the sternum. The ribs are spread wide apart with a rib spreader. This gives an opening large enough to put one's whole hand into the cavity. Lilienthal sucks out all the pus and lymph with a suction apparatus. As we have none in the operating room, I wipe out the pus and lymph with gauze, and then remove all the pyogenic membrane covering the costal and visceral pleura. The surface of the lung is then a bright red color, the greyish-white membrane being entirely taken away. With positive pressure from the gas oxygen machine or intertracheal ether, the lung is forced to expand fully, and it actually does come up to the chest wall. The wound is then closed tight except for a cigarette wick at either end of the incision.

Before one is familiar with the technic and sees how well patients go through the operation, one is apt to think this is a very dangerous and radical operation to put these patients through. It is surprising to see how little shock there is, and how much one can do to the surface of the lung without upsetting the patient's condition. Following the operation the patients are more comfortable than following any other operation for empyema,—the convalescence is much shorter, and they are healed up, as a rule, in from three to four weeks. Following the old method of operation on these cases, they were in the hospital six or seven weeks (or even longer) and then left with a drainage tube in, and reported to the out-patient department for some time—even if they did not become chronic with a persistent sinus. Following the Lilienthal method there is often no discharge except a little pussy serum and at the end of a week or ten days all drainage is removed. The last two cases that I have done left the hospital at the end of three and one-half weeks, with no discharge at all, and the wounds entirely healed up.

Although Lilienthal has been doing it for a couple of years, it is a very new operation in this part of the country, and I have done only 12 cases. They have all done well except one baby. In this case, the afternoon following the operation, he was sitting up eating his supper, the following day he was playing in his crib, and the next day while I was making a visit he had a convulsion, became paralyzed on one side and died that afternoon with symptoms of a cerebral embolus.

Of course, one's first thought is to do something that will relieve the immediate septic condition—in other words, save the patient's life, and secondarily, to do something that will prevent the case from becoming chronic. This can be combined at the Lilienthal operation in many cases, and it is only in the desperate ones that I believe it necessary to wait a few days or a week after draining the chest, before doing the radical operation. But I want to lay stress on the fact that this or some other radical operation must be done very early in order to prevent a bad result.

It is important in all operations for acute empyema, when there is a large amount of pus, to allow it to escape slowly. I know of two deaths on the operating table after making a large opening and allowing the pus to escape very rapidly. Although there was no autopsy on either case, yet it seems to me the deaths may be explained either from an acute dilatation of the heart or possibly from a so-called "fluttering of the mediastinum." Given a case with a large amount of pus and the lung collapsed, letting the pus out very quickly suddenly takes away the support of the mediastinum on one side. This is seen and spoken of especially in the one-stage operation of lobectomy and is a very distressing thing. When this happens or when the patient's condition becomes alarming through difficulty in breathing, on account of a large, open pneumothorax—if the edges of the wound are brought together and held tight for a few minutes, the condition rapidly improves, and then one can again go on with the operation.

The first question that naturally comes up is when to operate? Operate as soon as you can make a diagnosis. One would probably do well to leave the diagnosis in the medical man's hands, but I believe one should operate when the aspiration fluid shows a cloudy serum with a cell count of 50% or more polynuclear leucocytes.

The prognosis depends on the patient's condition and the kind of germ that causes the infection. In my experience the streptococcus cases do very badly, but fortunately they are not numerous in civil life. The pneumococcus cases do better than any others. There is a higher mortality in infants and children than in adults.

The after-care is very important. All patients, following whatever operation you elect to do, should be made to use "blow-bottles" until the sinus is closed and they are entirely well. Fresh air and good food and certain breathing exercises should be insisted on. They should be carefully followed until entirely well and able to resume their normal life.

The mortality with these operations has been reduced from a little over 20% to 12%. There will always be some mortality, as many cases are in very serious condition before operation; but early diagnosis and early operation will help to reduce the bad results.

It may interest you to hear what autopsy in these cases showed from 1901 to 1911. Out of 30 autopsies, 14 died from septicemia, 5 from pneumonia, 3 from pyemia, 1 from peritonitis, 2 from multiple abscesses of the lung, 1 from defective closure of the foramen ovale and thrombosis of the left pulmonary artery, and in 4 no definite cause was found. The commonest cause of death was septicemia—the majority being streptococcus septicemia and a few pneumococcus septicemia. It seems to me that in the septicemia cases this was very likely only a terminal affair, as in several of my cases blood culture taken a few hours before death showed a streptococcus septicemia, whereas blood culture taken 24 to 48 hours earlier showed no growth.

ENCAPSULATED EMPYEMA.

There are occasionally cases in which there is a suspected small area of pus in the chest, which cannot be definitely located. These should be opened up wide and thoroughly explored. The guide to a small amount of encapsulated pus—between the lobes or between the diaphragm and the lower lobe—is adhesions. After finding these the general pleural cavity should be walled off with hot, wet gauze, in exactly the same way as one walls off the abdominal cavity before opening an appendix abscess, then the adhesions may be broken through and the abscess cavity opened and drained.

I believe an exploratory thoracotomy should be done as readily as an exploratory laparotomy. The thoracic cavity may be opened and explored just as safely as the abdominal cavity. And if nothing pathological is found, it can be closed up tight and the patient recover just as readily as from an exploratory laparotomy.

It is better to do this exploration under positive pressure, as this will prevent the collapse of the lung when there are no adhesions present. Of course when there are adhesions the lung will not collapse anyway, but no one can tell, definitely, before operation whether or not these are present. In order to convince myself and the anesthetist at the hospital that it was better to do an exploration under positive pressure, I did two explorations within a week—one under gas oxygen and the other under intertracheal ether. On opening the pleural cavity in the first case (the one done under gas oxygen) there was a tremendous thrashing back and forth of the lung, the patient became shocked very quickly and was put to bed with a pulse of 170 to 180. The other case, that done under intertracheal ether, had a much larger exploration done—there was no thrashing of the lung and her pulse did not go above 85 either during or following the operation.

The best position for exploring the chest and for nearly all thoracic operations, except when the process is definitely anterior in an upper lobe, is the *prone position.* The patient is placed flat on his face with arms extended up alongside his head. This gives a very large field to work in, and for some reason the lung does not tend to collapse so readily as in other positions. Then, too, the sound lung can work easily and normally, whereas in any other position it is underneath and is handicapped in its efforts to expand. (In cases of interlobar empyema that have perforated into a bronchus, the head should be lower than the trunk, so that pus can and will be draining out the patient's mouth during the operation. The catheter in intertracheal ether aids rather than hinders in accomplishing this end.) This position allows one to explore readily, between the diaphragm and the lower lobe, the interlobar fissures, and the "Gutta" which is formed by the vertebral column and the ribs. This is a very favorite place for pus to collect and one not often explored unless the patient is in this position.

CHRONIC.

When a case should be called "chronic" is largely a matter of individual opinion—and may not be of much importance—but, I believe, many cases are chronic before they have ever been operated on. When a cavity is lined with a thick pyogenic membrane and containing thick pus and lymph, there is certainly nothing very acute about it, and I think that one reason why so many cases became "chronic" in the past was because surgeons did not recognize them as chronic in the beginning, and did the same operation regardless of whether a case was really an acute one or a chronic one. These cases I have already dealt with in the early part of this paper, and so for the sake of discussion I shall consider, tonight, as chronic only those cases that have been operated on and that have a persistent discharging sinus.

A perfect cure is one in which the lung expands fully, there being no discharging sinus, and the patient being able to resume his normal life.

Although the Schede operation, in which the ribs overlying the cavity and the parietal pleura are removed, may result in an entirely healed chest—so that there is no discharge—yet the lung never expands. About 50% of these cases heal up.

There is one way to get a perfect result—do a Schede operation and then do a complete decortication of the lung. Turn up a large skin and muscle flap—take off all ribs overlying the cavity—remove the costal pleura, which is often a third to a half an inch thick—then cut through the visceral pleura to the lung tissue and carry this incision across the lung. It is a remarkable sight to see this thin line of incision stretch wider and wider with each breath, so that in a few moments it is one-half to one inch wide with the lung trying to expand through it. The visceral pleura is then entirely dissected off the lung and with pressure from intertracheal ether the lung expands to the chest wall. Without any pressure it will expand about half way. In some cases the dissection is very easy, as one finds a good line of cleavage; in others it is very difficult, there being no good line of cleavage—and one must dissect carefully and slowly. However, making a few small holes in the lung tissue does no apparent harm.

In the last case that I did, I changed the technic a little, and instead of resecting five or six ribs, I resected only one, and then cut through the others overlying the cavity and retracted them one side. This made the operation a little more difficult as my approach to the visceral pleura was not so good and it was harder to take off the costal pleura, but it left a better chest wall, as the ends of the ribs were brought together and one was actually fastened.

The wound should be closed tight,—a small rubber tube is placed at the bottom, but this is tied off. At the end of 48 hours, this is opened and the serum is allowed to escape and then is shut off again. To enable the lung to expand fully, it is necessary to close the wound tight. My hope is that the lung will become adherent or partly so when fully expanded, and this should take place within 48 hours.

These cases should be carefully prepared for operation, and some simple drainage operation may be necessary before doing the radical one. Last summer I had a Boston University student who had been operated on three or four times: drainage had never been at the bottom of the cavity, so my first operation was to find out just what I was dealing with and then drain the cavity at the bottom. He went home for three weeks and then came back and had a decortication done. He did perfectly and is entirely well today and can do anything in the line of exercise he ever could,—in fact, I have just heard that he has been accepted in the draft for the Army.

The after-care is about the same as that following operation for acute empyema. The use of "blow-bottles," breathing exercises, good food and fresh air should be insisted on.

Here again the question comes up, When should one operate on these cases? The best answer is that one should never have any such cases, and with perfect surgery I don't think we will in the future. But to be practical, we know there are many such cases now. Two years ago, I thought one should wait one year after the original operation—one year ago I thought two or three months. At present, I think, from the original operation and from the patient's convalescence in the hospital, one should be able to decide whether or not he will get entirely well or need further surgery. If one decides that he needs another operation I think the radical operation should be done in a week or so after the first operation. The bad results have come from waiting too long before doing a radical operation.

The earlier the radical operation is done the better the prognosis. Children and young adults—up to 30 or 35 years—do better than older people. My best cases have been in those under 30. I have had no mortality, yet two patients ranging in age from 40 to 50 have not healed up entirely, but their lung expansion is larger than before operation. Both these cases were poor, ignorant foreigners that we could not handle properly after they left the hospital. The mortality following decortication of the lung has been reduced from 20% to 0. But I should add that I have done only eight such cases this last year. However, this does not seem such an insignificant number when one realizes that between the years 1901 and 1911 there were only five such cases done at the hospital.

I feel very sure that the best results in both acute and chronic empyema (following a decortication) are to be found in those cases that are closed up practically tight following operation. This gives the lung its only chance to expand. Surely, draining a chest with one or two large rubber drainage tubes, in and out of which positive air pressure rushes with each respiratory movement, is no longer modern surgery.

If you will stop a minute and think of the mechanism of respiration, I think you will agree with this statement. The diaphragm plays the leading part in respiration. When it moves downward it sucks air into the lungs, and they can easily expand on account of the negative pressure in the thoracic cavity; when it moves upward it forces the air out. Now, when a patient has a large hole in the chest wall the lung cannot expand because positive air pressure is, and must be, sucked in through the opening at the same time that air is being sucked into the lung. Therefore, it very soon becomes partly collapsed, a cavity is formed, the case becomes chronic and cannot be cured until something is done to overcome this collapsed condition.

My idea of the use of "blow-bottles" is not primarily to make the lung expand, as I do not believe that they do this, but to force the diaphragm to work very hard,—and this is accomplished in the effort of blowing the water from one bottle to the other, and at the same time whatever pus or serum has collected in the chest cavity is forced out. A very good illustration of this is seen following the Lilienthal operation. After removing the wick there is a small sinus,—and the patient is urged to use "blow-bottles" as often as he can, but especially when the dressing is changed. At this time, when blowing hard, the pus is actually driven out of the chest with considerable force.

Finally, I want to say a word or two about anesthesia, as I find this is a very important part of the operation.

Paravertebral anesthesia is the most satisfactory of any regional anesthesia in thoracic surgery. It is difficult to resect ribs with any ordinary local anesthesia without causing some pain to the patient. But with paravertebral it can be done very easily. It seems to me to *be ideal* in some of the old chronic cases and in the extremely sick, acute cases in which one is going to do some simple drainage operation. Unfortunately, the supply of novocaine gave out at the hospital some time ago and so I have done only five such cases; four were perfect, the other not so successful, but in one a large resection of ribs was done, and I could operate just as freely as if the patient had been under a general anesthetic.

Gas oxygen appeals to me very much,—I use it now in practically all cases of empyema. I have used it in old people and in infants, and have never seen any bad results. One can get enough pressure to expand the lung fully in doing a Lilienthal operation, but following a decortication in an old chronic case, the gas oxygen machine does not give enough pressure to expand the lung quite fully to the chest wall. So it is probably better to use intertracheal ether. This latter method of anesthesia is very simple and effective and I have never seen any bad results.

All thoracic surgery is a most interesting field to work in. Our ideas are constantly changing and advancing. One must be an enthusiast and an optimist, indeed, as there are constantly very discouraging things and patients to deal with. But I think the last year has seen progress made, at least in the immediate mortality. Whether or not these operations for empyema will prove to be the final correct ones the future alone can tell.

CLIMATE IN TUBERCULOSIS.

BY H. F. GAMMONS, M.D., CARLSBAD, TEXAS.

CLIMATE is the sum of all the meteorological conditions of a locality. The nearness to bodies of water, the latitude and altitude and prevailing winds are of the most importance and, in tuberculosis, the proximity of smoke- and dust-producing industries must be considered.

The physiological effect of hot climates is to increase the activity of the skin and liver, to stimulate the nervous system and to cause sluggishness of the muscular system and digestive system. Cold climates stimulate the digestive and muscular systems.

Live air is the most nourishing, but drafts are to be avoided as they tend to produce not uniform circulatory changes. The air in a place of great altitude contains a smaller amount of oxygen to a certain amount as compared with air of lower altitudes, due to the fact that the molecules of air are more separated at higher than at lower altitudes.

Air in pine districts was formerly thought to be very helpful in treating tuberculosis, and Dr. Mary Lapham and other observers in North Carolina and other pine districts report very good results at their sanatoria, due, as they seem to think, to the air, in a great part.

The question of climate valuation in the treatment of tuberculosis has received many and varied answers. On account of a lack of concrete facts, this question bids fair to be unanswered in a definite and convincing way except to men who have had an opportunity to study the disease in different climates and especially comparing damp and dry climates.

Klotz[1], after studying group cases in Vermont and California, concludes that greater and more lasting benefit would be obtained under the climatic conditions of California than under those in New England.

Trask[2] says "the best climate for one affected with pulmonary tuberculosis is that which furnishes a favorable atmosphere for the greatest number of hours of the day and the greatest number of days of the year. The favorable atmosphere must be cool, or at least it must not be hot for long at a time, nor must it be too cold, although cold is less objectionable than heat."

Cornick[3] says "If, despite the wonderful advancement of modern chemistry, a century's time had to elapse from the discovery of oxygen until the new element, argon, was found a few years ago, to be also a constituent of the atmosphere, we may hardly hope in the current generation to reach a universally accepted solution of all the mooted questions regarding the influence of climate on pulmonary consumption. While there is no general agreement, for example, among climatologists as to whether the aerial rarefaction of high and sunny mountain climates, where many consumptives get well, is to be regarded as a help or hindrance to the sunshine and dryness in accomplishing this result, there is one point, at least, on which there is substantial unanimity, namely, that in the climatic treatment of pulmonary tuberculosis the factors of dryness and temperature are favorable in proportion as they permit an open-air life in winter and summer, by day and by night."

Altitude was formerly thought to be a great help in the cure of tuberculosis and this was due to the efforts of Archibald Smith who, in 1848, went to the Andes to study climate. He found that there was more tuberculosis at Quito than at the higher mountain levels and consequently felt that there was an immune zone between the lower city and the higher mountain places. Observers in this country have felt that the value of climate was in altitude, but it has been proven that such is not the case and we know that tuberculosis is an economic and social disease.

It has been my pleasure to have served in two good sanatoria where climatic conditions are very dissimilar; the one, the Rutland State Sanatorium, located in the noted New England climate; and the other, the Texas State Sanatorium, located in the arid Southwest. In Rutland we had, during my service, very few cavity cases and these tended to progress. In Texas most of our cases have, or have had, cavities which tend to heal or have already healed.

The signs in the chest in the Texas cases are more limited to irregular breathing, the catarrh is not as much noticed and in those cases with the catarrh of the bronchioles or alveoli, the adventitious sounds are fewer in number, diffused and of a crepitant character.

In Rutland I noticed more normal vesicular breathing and the adventitious sounds were more confluent and louder sounding.

In the Texas cases there is less fever, cough and night sweats, fewer laryngeal infections, mucous membrane colds and attacks of rheumatism.

In Texas we notice marked dryness of the mucous membranes, while in Rutland moist catarrh is the rule.

The very warm weather in Texas, which is of a not long duration, was very depressing, although probably no more so than the warm weather of the more humid cooler climates, while in Rutland the cold fall and winter months were very stimulating and patients seemed to do much better in the cold weather.

There is a prevailing optimistic temperament in the Southwest, due to the almost continual sunshine, and also there is a fixation of carbon in the system as the result of this sunshine which must have a very decided curative effect.

CONCLUSIONS.

A person with an ulcerative case of tuberculosis who has given his home climate a chance and at the same time has coupled the climate with other standard treatments for tuberculosis, such as fresh air at all times, rest, and diet and contentment of mind, and who is at a standstill, will, if he is financially able, unquestionably obtain good results in the Southwest. It is necessary, however, for such a patient to have all other factors necessary to the cure, such as rest, diet, etc.

If one is fortunate in being able to take the cure in one of the sanatoria of his vicinity under the proper regulations, it is better than to go to the Southwest and to be compelled to care for one's self or to "rough it."

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[2] Trask: Reprint of The Journal of Outdoor Life, Vol. xiv, from Public Health Reports, U. S. P. H. Reports, Feb. 23, 1917.

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Book Reviews.

Manual of Psychiatry. By I. R. DE FURSAC, and A. J. ROSANOFF. New York: John Wiley & Sons. 4th Edition. pp. 522.

This revision of a very concise and useful book, owing to the war in Europe, and the difficulty in close coöperation caused by it, has been left to the American author by agreement. The chapters in the first part, dealing with etiology, history-making, general prognosis, prevalence of mental disorders, prevention, and medico-legal questions, and in the second part, those dealing with Huntington's chorea, cerebral syphilis and traumatic psychoses, are either wholly new or almost so. The chapter on general paresis is perhaps particularly well done, for not only is a distinct and clear picture given of the mental symptoms, but the physical ones are adequately described, and modern pathology and modes of testing are not ignored. The chapter on traumatic psychosis might well have been more full, as the chronic confusional mental states with delusions which not infrequently follow severe head injuries, deserve fuller description, as well as the dementia. On the whole, considering its brevity, we know of no more satisfactory book on mental disorders, and this manual, improved by this revision, will doubtless become increasingly popular and deservedly so.

An Inquiry Into the Principles of Treatment of Broken Limbs. A Philosophico-Surgical Essay, with Surgical Notes. By WILLIAM F. FLUHRER, M.D., Consulting Surgeon to Bellevue and Mount Sinai Hospitals. New York: Rebman Company.

This well printed and attractively illustrated book is distinctly worth reading. The author describes it as a "philosophico-surgical essay:" he should have added the adjective "historical," since the book abounds in references to the surgery of New York of 40 to 50 years ago.

The methods described were undoubtedly very effective in the author's hands: the fundamental principle of rapid reduction and immediate immobilization of broken bones is undoubtedly correct; and the addition of tin strips to plaster bandages in fractures of the leg might at present be adapted with good results. The author was evidently direct and original in his work, and his story is well deserving of its present form. The value of the volume is rather from the standpoint of collateral reading, than from that of a textbook; its sidelights upon the recent past are illuminating in the consideration of many of the strongly advocated measures of the immediate present.

The Control of Hunger in Health and Disease. BY ANTON JULIUS CARLSON. Chicago: The University of Chicago Press.

Dr. Carlson presents in book form the summary of the work of himself and associates in regard to hunger and appetite. While the work has been published in scientific journals as it developed, the present book is not a collection of previously printed papers, but an entirely new production, in the light of the completed work. It is in a sense a monograph, although the treatment is never essentially technical. It is, indeed, a most happy thought on the part of the author to present his work in readily available form. Dr. Carlson's work is perhaps too well known to require extended comment. It may not be out of place, however, to emphasize the practical applications of many of his laboratory experiments. His careful differentiation between hunger and appetite is noteworthy. His sane conclusions regarding the use of bitter tonics will be instructive to most of the profession. In general the book is one of a very small group of publications, in which the author is able to present, in concise form, valuable and interesting subject-matter almost exclusively based on first-hand observations.

Standard Surgical Dressings. By NELLIE A. MACKENZIE, R.N. Boston: Whitcomb & Barrows.

This manual, issued by the Surgical Dressings Committee of the New England Section of the Woman's Department of the National Civic Federation, contains concise and accurate directions for making standard surgical dressings and represents practice employed in the work of the committee at the Peter Bent Brigham Hospital, Boston, in the preparation of dressings for the Entente Allies in the present European War. It is conveniently divided into seven chapters, dealing respectively with materials, technic, sterile dressings, non-sterile dressings, packing, sterilization, storage and shipment. It is well illustrated with a number of text cuts and diagrams, and has a prefatory note by John W. Eliot, M.D., chairman of the Surgeons' Advisory Committee. This monograph is not only of immediate value in the continued work of the committee, but should form the basis of a subsequent work by the author on the preparation of surgical dressings, of which there is at present no English textbook in existence.

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TRENCH FOOT.

THE present view of trench foot has broadened to such an extent that it has become somewhat difficult to gain an entirely clear idea of the relation between the various phenomena coming under this head. In early classifications, most writers were disposed to consider it as a form of frostbite. For example, Rathery and Bauzil in *Paris Médicale* of March 31, 1917, apparently regard it in this light, and treat the symptoms accordingly, although their method is new. But as more facts have been collected, and the conclusions are now published, considerable doubt has sprung up respecting many points in the etiology of the cases reported from the various fronts. One fact clearly emerges from the discussion—cold or frost alone is not the essential factor. To produce trench foot cold and wet must be combined, and it is becoming fairly certain that they are associated in most cases with constitutional elements.

In one of the most recent accounts (*Gazetta degli Ospedali,* October 21, 1917) Tassone states that, in addition to frost and wet, the immobility of the limbs is the most important factor. Similarly, Borchard (*Zeitschift für Chirurgie,* 1916, xliii, p. 142) notes that resting the legs is favorable to the occurrence of "frost-gangrene," implying that the inactive circulation is a causal influence. This explains why the feet are attacked first, and the shins next, the feet being farthest from the heart. On the other hand, Tassone points out that soldiers who keep up a vigorous circulation by marching and other muscular exertion usually have sound, healthy feet, and escape not only edema and gangrene, but also the milder forms of frostbite. The evil tendency is aggravated by the footgear of some armies. British surgeons frequently complain that the wearing of puttees and tight-fitting boots predisposes to trench feet by constricting the circulation. The puttee appears to be particularly objectionable, as it soaks up water which freezes on the legs. In spite of this obvious fault, puttees and leggings, which have the same defects, are still in use. It may be noted in this connection that the prevalence of trench foot has an important bearing, not only on the question of footgear, but also on army discipline in general. Among nations, the Germans and Bulgarians, with their heavy boots and woolen stockings, have suffered relatively little, whilst the Russians, owing to carelessness and shortage of leather, have been in the worst plight.

Since trench foot occurs in healthy, well-clad men, some authors have sought to connect it with constitutional causes. Thus Lieutenant Longridge (*The Lancet,* 1917, Vol. i, p. 62) observes that the blisters and sores are like the trophic sores of diseases of the nervous system, and he deduces a central origin. He adopts the thesis that trench foot is due to "leakage of neuro-electricity." This seems a rather fantastic effort to find a cause, but it may be readily admitted that nervous inhibition plays an important part. Some evidence in favor of this view is supplied by Ellis (*British Medical Journal,* 1917, Vol. i, p. 573). He noted the curative effects of nitroglycerine through dilatation of the peripheral vessels.

More recently, Raymond and Parisot have published a series of observations which tend to show that a mycelium is the cause of trench foot. They isolated an organism of this species from the water of the trenches (*Société medicale des hôpitaux de Paris,* October, 1917). The mode of action is described briefly as follows: Soldiers stand for hours in water; their shoes and stockings become soaked, and the mycelium gradually penetrates the skin and tissues. Their method of treatment, which has the approval of the highest French authorities, consists in gentle cleaning of the skin with boiled water, in which soap is dissolved, and the application of compresses of sterile gauze soaked in a solution of powdered camphor and sodium borate. Care is taken not to break the skin or the blisters, but in cases of abrasion, a powder of camphor, sodium borate, betanaphthol, and eucalyptus is used. In most cases the infection is thoroughly eradicated by this treatment. It is applicable to the cases of frostbite, and owes much of its special merit to its rational character and avoidance of the older methods of rubbing with ice or snow, incision of the blisters, and immobility of the feet. It is better to use tepid water, gentle massage, and passive hyperemia.

The most valuable part of this study relates to treatment and problems of gangrenous change. Trench foot exists in at least four stages—the neuritic, producing pain; the edematous without discoloration; the edematous with blisters; and the gangrenous, partial or circumscribed, with redness. Captain A. D. Haydon describes, in addition, septic cases, with more or less constitutional disturbance, with fever, and still graver cases with cellulitis and purulent infection extending up from the dorsum of the foot (tendo Achillis) to the shin. Such cases are complex, in which it is difficult to disentangle the etiological elements. They must be treated by means of vaccines, antistreptococcic serum, injections of antiseptics into the veins. For the moist gangrene the best remedy is iodoform dissolved in ether, one part in ten. Spreading gangrenous cellulitis is noted in the worst cases,—a condition which he treats by free incisions, drainage, and sometimes amputation.

Trench foot accounts for so much preventable suffering and disability that we should be less than human if we did not point out two very obvious criticisms. Most of the surgeons abroad agree that waterproof shoes and warm woolen stockings, over which flannel is drawn in winter, are prophylactics. Some writers suggest rubbing the feet with grease. So far as we have observed, much attention is paid to the shape of the soldier's feet, to flat foot, and the style of the shoes, but the essential things are too often overlooked.

VOCATIONAL REHABILITATION OF DISABLED SOLDIERS.

ON January 14, 1919, a most important conference met at Washington to fix on a program for the re-education of crippled soldiers of the American forces. Invitations to attend this conference were sent out by the Surgeon-General of the Army, at the request of the Secretary of War, to representatives of all government departments and private agencies which might be interested in the question. The attendance at this conference represented the following: Surgeon-General of the Army, Surgeon-General of the Navy, Surgeon-General of the Public Health and Marine Hospital Service, Bureau of War-Risk Insurance, Bureau of Education, Federal Board of Vocational Education, Department of Labor, Federal Compensation Commission, Council of National Defense, Department of Civilian Relief of the American Red Cross, Red Cross Institute for Crippled and Disabled Men, American Federation of Labor, Chamber of Commerce of the United States, National Association of Manufacturers.

The Surgeon-General of the Army presented a program which had been worked out by his office, providing for a comprehensive system of reconstruction, medical and economic, to be carried out under military auspices. The other conferees brought forth the argument that while medical and surgical repair were well within the scope of the surgeon-general's work, vocational training was a civilian matter, and should be cared for by civilians. It was also maintained that the after-care of the disabled soldier was already delegated by Congress, in some degree, to the Bureau of War-Risk Insurance, and that several other departments had very definite interests and responsibilities in the matter.

After much discussion, a committee was instructed to draw up a program to be followed. This committee met several times, and on January 21 appeared before the conference, bringing the draft of a bill for submission to Congress, calling for the creation of an inter-departmental commission to be known as the Board for Vocational Rehabilitation. After several amendments had been made, the bill was presented to the Surgeon-General of the Army, for transmission to the Secretary of War, and is now being introduced into Congress.

The measure as adopted by the conference provides for the vocational rehabilitation and return to civil employment of persons discharged from the military or naval service of the United States, who have been disabled in the line of duty when in such service, when the result is dismemberment, or injury to sight, or to hearing, or other disability, including disease. When mustered out of military service, such disabled persons shall, upon the order of the Bureau of War-Risk Insurance, follow the courses of vocational rehabilitation provided for by the Board of Vocational Rehabilitation, which is created under this measure.

The Bureau of War-Risk Insurance is empowered to order any disabled person who is unable to pursue his former occupation or some other gainful occupation, to follow the vocational rehabilitation courses. The same compensation as that given for total disability is to be allowed while the disabled person is pursuing these courses, and compensation may be withheld if the courses are not followed in a satisfactory manner.

The Board of Vocational Rehabilitation is to include one representative, respectively, of the Department of the Treasury, Department of War, Department of the Navy, Department of Labor, Federal Board for Vocational Education, and the members of the Board are to serve without compensation except for traveling and other necessary expenses.

The Board is authorized to establish three advisory committees,—one on agriculture, one on commerce and manufacture, and one on labor,—such committees to consist of persons who have special ability and experience with regard to the training and employment of men in agriculture, industry, and commerce.

The Board is to establish courses of vocational rehabilitation, which are to be given in connection with schools already established, or with industrial and commercial plants wherever possible. Provision is also made for the building of special schools where the need arises.

All medical and surgical work necessary to give functional and mental restoration to disabled persons in military service shall, until their discharge, be directly under the control of the War Department and the Surgeon-General; disabled persons in naval service shall, until their discharge, be cared for by the Navy Department and Bureau of Medicine and Surgery of that Department. After discharge, functional and mental restoration are to be cared for by the War-Risk Insurance Bureau. Whenever pre-vocational work, mental or manual, is employed by the above agencies as a therapeutic measure, a plan shall be arranged between each of these agencies and the Board for Vocational Rehabilitation, in order to provide for a continuous process of pre-vocational and vocational training.

Ten million dollars are to be appropriated from the Treasury for the carrying on of the work.

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REDUCTION IN PAY OF OFFICERS IN THE FIELD.

A LAW which has been causing much discussion of late is that which takes from Army officers in the field who have dependents, the allowance for quarters which officers behind the lines receive. Though it might be supposed that a sound military policy would favor those nearest the fighting line, and so in greatest danger, and although in circulars now issued to candidates for commission in the Army the Government promises quarters or commutation, by a decision of the War Department, officers who are now serving in France, on the Mexican border, or in training camps have been deprived of this allowance. The commutation for quarters is paid when the officer is ordered on some detached service or city service in Washington or elsewhere. Never is there any consideration taken of the officer's family, as to quarters.

In times like these, it stands to reason that officers' families, as well as other people, are in need of the assistance which the allowance for quarters would give. Bills have twice been introduced into the Senate, which have attempted to restore the allowance, but have in both cases failed to pass on account of opposition from the War Department. The Quartermaster-General issued a statement to the effect that the annual expenditure for this purpose would amount to about thirty million dollars. The mere fact that the Quartermaster-General should issue such a statement, which practically means that the Government is depriving the families of Army officers of that amount, would seem almost enough to bring about the passage of a bill which has recently been introduced into the House of Representatives, to secure for officers with dependents while on duty with troops, the commutation for quarters which they previously received.

There can be no doubt that the cutting off of such an allowance is a hardship to the officers and to their families. It is a well-known fact that many wives of officers are seeking employment to help support their families while their husbands are serving on the Mexican border or in France.

It is necessary for the effective development and maintenance of our fighting forces that they themselves shall be properly housed, and also that their families be kept in comparative comfort. The effect of the present War Department policy is to decrease the pay of every officer who is on duty with a tactical unit at camp or cantonment either at home or abroad, while the pay of officers not on duty with troops remains the same as in time of peace. To quote from the *Defense Bulletin:*

> "No pacifist could contrive a more discouraging handicap to the successful prosecution of the war than to cut the pay of officers nearly 25% as soon as they start to fight or to teach others how to fight, and this at a time when their situation and that of their dependents makes them peculiarly susceptible to disastrous effects of the rapid and great increase in the cost of living."

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MEDICAL NOTES.

LOW DEATH RATES DESPITE THE SEVERE COLD.—After two months of the most severe winter weather which this city has ever experienced, New York emerges with a health record which shows a saving of over 2600 lives over the death toll paid by the city during the corresponding months of 1917.

For the first two months of 1917 the death rate was 16.97 in 1917, as against 15.51 for the same period this year. If the death rate experienced in the first two months of last year had prevailed during the two months of this year, the number of deaths would have been 16,608. As a matter of fact, only 13,962 deaths occurred, which means a saving of 2,646 lives during the two months of 1918. When we consider the remarkable atmospheric condition prevailing during the two months past, and the fuel and food difficulties which arose during that time, it is a cause for congratulation on the part of the people of the city that so favorable a showing can be made.

The most noteworthy reduction in the mortality was that from lobar pneumonia, there having been a decrease of 450 deaths reported from this cause, as compared with the corresponding period of 1917. Pulmonary tuberculosis, which showed for the first time in many years an increased mortality during 1917, gives promise of being lower for this year, as during the two months under discussion a perceptible decrease in the death rate from this cause has already occurred.

The saving of life has been mostly among adults, a fact which makes the saving to the community the more valuable. The number of births reported during the first two months of 1918 was 22,021, as compared to 24,227 during the same period of 1917, a decrease of 2206. There was also a falling off in the number of marriages, only 8389 having occurred in the first two months this year as compared to 11,187 during the same months last year.

SMALLPOX IN NEW YORK STATE.—Some time ago we commented on the prevalence of smallpox in various parts of Connecticut, and pointed out that unvaccinated communities, if invaded, would pay dearly for their failure to make use of the proven protective vaccination. According to a report just issued by the New York State Department of Health, a number of local outbreaks of smallpox occurred during the past year in various parts of New York State, in several instances the disease entering New York from Connecticut. In other instances the primary case came from Massachusetts, Canada, Ohio and from Pennsylvania.

Early in last November the disease made its appearance in central New York, the first case being discovered at Rome. From there it spread to Utica, where 47 cases resulted in the next two months, and to Frankfort in Herkimer County, 78 of them in the town and village of Frankfort.

Within the past few months over 250 cases of smallpox have occurred in various parts of the state, several of them within the city of New York. Moreover, as may be seen from the U. S. Health Reports, smallpox is prevalent not in New York State alone. Hence, in spite of vigilance, those who travel or who mingle with others may at any time come into close contact with persons capable of transmitting the disease. According to the State Health Department, a salesman was recently encountered who, while he was suffering from smallpox, had travelled over several counties before his condition was discovered.

GOVERNMENT TO SUPERVISE MEDICAL SCHOOLS.—A special division of the Surgeon-General's office has been created under the charge of Major H. D. Arnold, M.R.C., which is to oversee the work of students enlisted in the Medical Reserve Corps under the section of the selective service act, which provides that students in "well-recognized" medical, dental, or veterinary schools may, with the permission of the Surgeon-General, be enlisted in the Medical Reserve Corps, which is not liable to active call to service until full professional knowledge is acquired.

The appointment of Professor Waite of Western Reserve to this board is a significant one, for he is a recognized authority on medical education. Not only does this appointment show that the nation is planning to see to it that the doctors who go into the Army are qualified to fill their positions, but it means that some medical schools will no longer be able to conceal their shortcomings. Should this board to which Dr. Waite has been appointed find that any student in the Medical Reserve Corps is not making satisfactory progress with his professional studies, he may be removed from the reserve list, and be made subject to call to active military service.

The direct result of such an investigation should help to standardize medical education, and make public the standing of medical schools.

PRINCIPAL CAUSES OF DEATH.—The Census Bureau has issued a statement with reference to mortality in 1916, showing that the "registration area," which contains approximately 70% of the population of the United States, reported for that year 1,001,921 deaths. Nearly one-third of these deaths were due to three causes,—heart diseases, tuberculosis, and pneumonia,—and nearly another third were due to the following nine causes: Bright's disease and nephritis, cancer, apoplexy, diarrhea and enteritis, influenza, arterial diseases, diabetes, diphtheria, and typhoid fever. Cancer and other malignant tumors caused 58,600 deaths in 1916, in the registration area. Of these, 22,480 resulted from cancers of the stomach and liver. The death rate from cancer has risen from 63 per 100,000 in 1900, to 81.8 in 1916. For the whole United States, the cancer mortality is not less than 80,000 per annum. The increase in cancer mortality has been almost constant, though part of this increase may be due to more correct diagnoses and greater care on the part of the physicians in reporting to the registration officials.

It is shown by the census announcement that the decline in the tuberculosis death rate has been most pronounced, due to the progress which has been made in its prevention and treatment. Those interested in the control of cancer may feel that educational activities along that line may be as successful in its control as they have been in the control of tuberculosis. There has been a steady increase in the number of patients seen in time for successful treatment of cancer, and a marked increase in the number of those seeking advice about pre-cancerous conditions.

SECTIONAL CONFERENCE PLANS.—Preliminary arrangements are now being made for six sectional conferences on tuberculosis next fall. The time and place of each will soon be announced. At five conferences last year, Continuation Committees were elected to act in an advisory capacity regarding plans for the 1918 meetings. These committees are now giving consideration to the matter of time and place, as well as suggestions for programs. Members of the Continuation Committee from New England are as follows: Dr. E. D. Merrill, Foxcroft, Me.; Dr. George Haven Clarke, Concord, N. H.; Dr. Edward J. Rogers, Pittsford, Vt.; Hon. Jonathan Godfrey, New Haven, Conn.; Miss Mary Murray, Providence, R. I.; and Dr. Arthur K. Stone, Boston.

SPANISH NATIONAL MEDICAL CONGRESS.—It is announced that the first session of the Spanish National Medical Congress will be held at Madrid from April 21 to 26, 1918, in seventeen sections, under the presidency of Dr. Ramon Y Cajal. Dr. Cajal, known for his work on the histology of the nervous system, was born in 1852, the son of a physician and professor of anatomy. After graduating from the University of Saragossa in 1873, he served for a time as an army medical officer in Cuba. He was appointed professor of anatomy at Valencia in 1881, professor of histology in Barcelona in 1886, and at Madrid in 1892.

WAR NOTES.

PUBLIC HEALTH ADMINISTRATION IN RUSSIA.—Russia, with a population of 180,000,000, by far the greater part of which lives in rural districts, has developed a remarkable system of free medical care and health protection for her rural inhabitants. Up to 1864, the practice of medicine was confined chiefly to the cities. After the creation of the zemstvos by Alexander II, an effort was made to give free medical care to rural inhabitants, and by 1870 the zemstvos had arranged a system of fixed medical districts, each provided with a small hospital and a qualified physician. The number of hospitals has since then constantly increased. The tendency has been to make all hospital and dispensary work free, as the care of the sick is thought to be a natural duty rather than an act of charity. The province of Moscow has the most fully developed system, providing a hospital for every 10,000 to 15,000 inhabitants, each with two physicians, two medical assistants, and four sister nurses. Each of the larger hospitals provides a certain number of beds for general use, for communicable diseases, and maternity cases; each has its dispensary, and no charge is made for medicine or for medical care; home visits are made only in serious cases. On the preventive side, the province of Moscow is divided into thirteen sanitary districts, with medical supervisors, a central statistical division, a laboratory and a vaccine institute. There is a sanitary council for each district, and also for the whole province, with district physicians and factory physicians, all of whom are under the control of the zemstvos.

BOSTON AND MASSACHUSETTS.

WEEK'S DEATH RATE IN BOSTON.—During the week ending March 2, 1918, the number of deaths reported was 345, against 299 last year, with a rate of 22.94, against 20.19 last year. There were 58 deaths under one year of age, against 56 last year.

The number of cases of principal reportable diseases was: diphtheria, 96; scarlet fever, 36; measles, 190; whooping cough, 56; typhoid fever, 1; tuberculosis, 66.

Included in the above were the following cases of non-residents: diphtheria, 14; scarlet fever, 8; measles, 3; tuberculosis, 7.

Total deaths from these diseases were: diphtheria, 5; scarlet fever, 1; measles, 2; whooping cough, 2; typhoid fever, 1; tuberculosis, 35.

Included in the above were the following non-residents: diphtheria, 2; scarlet fever, 1; typhoid fever, 1; tuberculosis, 3.

CUTTER LECTURES ON PREVENTIVE MEDICINE.—The Cutter Lectures on Preventive Medicine and Hygiene for 1918 will be given by Professor E. V. McCollum, of the School of Hygiene and Public Health, Johns Hopkins University. The dates and subjects are as follows:

March 19—The Essentials of an Adequate Diet.

March 20—The Special Dietary Properties of Our Natural Foodstuffs.

March 21—The Dietary Habits of Man and Their Relation to Disease.

The lectures will be given in the Amphitheatre of Building E, Harvard Medical School, from 5 to 6 p.m.

The Massachusetts Medical Society.

MASSACHUSETTS STATE COMMITTEE, COUNCIL OF NATIONAL DEFENSE, MEDICAL SECTION.

LIST OF MASSACHUSETTS PHYSICIANS IN THE SERVICE OF THE ARMY, NAVY AND RED CROSS, COMPILED BY THE MASSACHUSETTS STATE COMMITTEE, COUNCIL OF NATIONAL DEFENSE, MEDICAL SECTION, AS OF FEBRUARY 1, 1918.

THIS list contains only names of men whose official acceptance of their commissions had been received previous to February 1, 1918. Names in small type are of Medical Reserve Corps, United States Army. Those in capitals and small capitals are designated as follows:

"Medical Corps"	Medical Corps, Regular Army
"National Guard"	Medical Corps, National Guard
"Navy"	Medical Corps, Navy
"Naval Reserve"	Medical Corps, Naval Reserve
"Red Cross"	Red Cross Service, Europe

*Honorably discharged † Killed in action

Any corrections will be gratefully received by the Secretary of the Committee, Dr. Walter L. Burrage, 282 Newbury Street, Boston.

Abbot, Edward S.	Waverley
Adams, Donald S.	Boston
Adams, Edward A.	Ntn. Lr. Falls
ADAMS, WINTHROP, Naval Reserve	Cambridge
Adams, Zabdiel B.	Boston
Aimone, Victor A.	Winchester
Alexander, Harry L.	Boston
Alexander, Kirke L.	Orange
Allen, Arthur W.	Boston
Allison, Carl E.	Somerville
Amiral, Hiram H.	Boston
*Anderson, John H.	Brockton
ANGELL, WORCESTER R., Naval Reserve	Brookline
APPLEBAUM, JACOB, Naval Reserve	Boston
Arnold, Horace D.	Boston

ASH, JAMES E., **Medical Corps**	Boston
Ash, Richard M.	West Quincy
Ashmore, Buell L.	Palmer
Aub, Joseph C.	Boston
Austin, Arthur E.	Boston
Babcock, Harold L.	Boston
Bagnall, Elmer S.	Groveland
Bailey, Charles H.	Gardner
BAILEY, KARL R., **National Guard**	Boston
BAILEY, WALTER C., **Red Cross**	Boston
Baker, Horace M.	Boston
Banquer, Jacob E.	Boston
Barnes, Frederick R.	Fall River
Barnes, Louis D.	Lanesborough
BARROW, WM. H., **Medical Corps**	
Bartol, Edward F. W.	Milton
Bartol, John W	Boston
Batchelder, Hollis G.	Dedham
BAXTER, CLARENCE P., **Medical Corps**	Topsfield
Baxter, William E.	Topsfield
Beal, Howard W.	Worcester
Bearse, Carl	Boston
Beaudet, Elphege A.	Lowell
Beaupre, Dolor I.	Holyoke
Beckley, Chester C.	Lancaster
BEDARD, J. ARMAND, **Red Cross**	Lynn
Beebe, Theodore C.	Boston
Begg, Alexander S.	Boston
Behrman, Roland A.	Roslindale
Belding, David L.	Boston
Bell, Richard D.	Somerville
Benoit, Samuel J.	Gardner
Berry, Gordon	Worcester
*Berry, Walter D.	Braintree
Bigelow, Edward B.	Worcester
Bigelow, George H.	Boston
Bill, Jose P.	Boston
Binney, Horace	Boston
Biondi, George C.	Framingham
Birdsall, Clarence H.	Boston
Birnie, John M.	Springfield
Bishop, Franklin L.	Boston
BLANCHARD, WM. H., **National Guard**	Allston
Blanchette, William H.	Fall River
Boardman, William P.	Boston
Bock, Arlie V.	Boston
BOGAN, FREDERICK L., **National Guard**	Boston
Bolduc, Alfred G.	Attleboro
Bonneville, A. J.	Hatfield
Boothby, Walter M.	Boston
Bostick, Warren J.	W. Springfield
Bottomley, John T.	Boston
Bowen, James F.	Amherst
Brackett, Elliot G.	Boston
Breed, Nathaniel P.	Lynn
Bressler, Charles W.	Boston
Bridgwood, David	Warren
Briggs, Lloyd V.	Boston
BRIGGS, MAURICE T., **Naval Reserve**	Boston
BROWN, CHESTER P., **National Guard**	
Brown, Percy	Boston
BROWN, ROY F., **National Guard**	Fall River
Browne, William E.	Boston
BRUCKSHAW, HENRY A., **Naval Reserve**	Fairhaven
Brunelle, Arthur L.	New Bedford
Bryant, John	Boston
BRYANT, MASON D., **National Guard**	Lowell
Buckley, James T.	Marlboro
Budreski, Alphonse F.	Brighton
Bull, Edward C.	Boston
BUNKER, HENRY A., JR., **National Guard**	Boston
Bunker, Sidney M.	Worcester
Burke, Francis R.	Quincy
Burke, George H.	Springfield
Burnham, J. Forrest	Lawrence
Burns, John E.	Natick
Burpee, Benjamin P.	Boston
Burrell, Harry C.	Medford
BURT, CLARENCE E., **Medical Corps**	New Bedford
Butler, Charles S.	Boston
Byrne, William R.	Framingham
Byrnes, Harry F.	Springfield
Cabot, Richard C.	Boston
Cady, Frederick B. M.	Cambridge
Cahill, Harry P.	Boston
Caines, Richard J. R.	Boston
Caldicott, Francis S.	Taunton
CAMPBELL, FRANKLIN E., **Naval Reserve**	Medford
Canedy, Charles F.	Greenfield
Cannon, Walter B.	Boston
Carden, Charles J.	Haverhill
Carley, Arthur W.	Ayer
Carney, Harold E.	Boston Harbor
Caro, Herman	Palmer
Carpenter, Robert J.	North Adams
Carr, Arthur W.	Bridgewater
Chadwell, Orville R.	Boston
Chagnon, Deodatus T.	Holyoke
Chambers, Ralph M.	Westboro
Chandler, Clarence L.	Fitchburg
Chandler, Harold B.	Boston
Chandler, Thomas E.	Boston
Chapin, William A. R.	Springfield
Chaput, Lucien R.	Haverhill
Chase, Frank H.	Chelsea
Chase, Heman B.	Hyannis
CHEEVER, AUSTIN W., **Naval Reserve**	Mattapan
Chereskin, Johnston L.	Springfield
CHISHOLM, LAWRENCE C., **Naval Reserve**	Salem
Chisholm, Miles D.	Westfield
Choquette, Hormidas	New Bedford
Chronquest, Alfred P.	Danvers
Claffy, John McM.	Springfield
Clark, DeWitt S.	Salem
Clark, Harry A.	Andover
CLARK, W. IRVING, **Red Cross**	Worcester
Clarke, Willis E.	Malden
CLIFFORD, RANDALL, **Naval Reserve**	New Bedford
Clute, Howard M.	Boston
Clymer, George	Boston
COATES, EDWARD A., JR., **Medical Corps**	Chelsea
COBB, GARDNER N., **Naval Reserve**	Boston
Coburn, Harry R.	Tewksbury
Cochrane, Robert C.	Boston
Coffin, Whitman K.	Provincetown
Cogswell, George P.	Cambridge
Cogswell, William	Haverhill
Cohen, Nathaniel M.	Boston
Cohen, Samuel A.	Roxbury
Collins, Joseph D.	Northampton
Collins, William J.	Northampton
Colwell, Howard S.	Worcester
COLWILL, ALBERT W., **National Guard**	
Conner, Homer L.	Haverhill
Connery, William L.	Springfield
CONNOR, HAROLD J., **National Guard**	
CONNOR, WILLIAM H., **Navy**	Pittsfield
Cook, James H.	Quincy
Cook, Robert J.	Boston
Cort, Parker M.	Springfield
Cosgrove, Joseph J.	Westfield
Cotting, William F.	Boston
COTTLE, GEORGE F., **Navy**	Edgartown
Councilman, William T.	Boston
COUPAL, JAMES F., **National Guard**	Boston
COURTNEY, THOMAS J., **Naval Reserve**	Waltham
COWLES, DWIGHT J., **Naval Reserve**	Ipswich
Cox, Oscar F., Jr.	Boston
Craigin, George A.	Boston
Crandall, Walter M.	Lawrence
CRANDON, LEROI G., **Naval Reserve**	Boston
CREMENS, JOHN F., **Naval Reserve**	Cambridge
Crimmin, Leo P.	Boston
Crosbie, Arthur H.	Boston
CROCKETT, EUGENE A., **Red Cross**	Boston
CULLEN, CHARLES A., **Naval Reserve**	Hyde Park
Cunha, Manuel F.	Boston

Cunningham, Richard A.	Boston
CURLEY, CLARENCE P., Naval Reserve	Provincetown
CURRAN, ARTHUR M., National Guard	North Adams
Curtin, John F.	Lawrence
Cushing, Harvey	Brookline
Cutler, Elliott C.	Boston
Cutter, Irving T.	Winchester

Dacey, Cornelius J.	Brockton
Dalrymple, Alfred T.	South Boston
Dana, Harold W.	Brookline
Danforth, Murray S.	Boston
Darling, Eugene A.	Cambridge
Davis, Charles H.	Hamilton
Davis, Ernest L.	Springfield
Davis, Frank A.	Boston
DAVIS, HENRY L., National Guard	
Davis, Henry L.	Chelsea
*Davis, Henry L.	Lynn
Davis, Lincoln	Boston
Dennen, Ralph W.	Waltham
Denning, William E.	Worcester
Denny, George P.	Boston
Derby, George S.	Boston
DeWolf, Charles W.	Tewksbury
Diehl, Harold E.	Quincy
Dillenback, Emil U.	Springfield
Dillon, William J.	Springfield
DiMento, Vincent J.	Brighton
Dobson, Clarence H.	Conway
Dobson, William M.	Dor. Center
Dodd, Isaac S. F.	Pittsfield
Dole, Kenneth L.	Boston
Dolloff, Eugene M.	East Lynn
Dow, DAVID C., Naval Reserve	Cambridge
Dowling, John J.	Boston
DOWNING, JOHN G., Naval Reserve	Boston
Doyle, John H.	Fall River
Drury, Dana W.	Boston
DUDLEY, AUGUSTUS W., Naval Reserve	Cambridge
Dudley, Charles	Kingston
DUDLEY, OSCAR A., National Guard	Saxonville
DUFF, JOHN, JR., Navy	Boston
Duffy, Edward A.	Boston
DUNN, JOSEPH H., National Guard	
Dwinell, George F.	Boston
DWYER, WM. J., National Guard	Cambridge

EASTMAN, GEORGE W., Naval Reserve	Lynn
Eaton, Harold B.	Boston
EATON, WILLIAM E., Navy	Boston
ELDRIDGE, DAVID C., Naval Reserve	Dorchester
Eliot, Henry W.	Belchertown
Ellsworth, Samuel W.	Boston
ELY, THEODORE W., National Guard	Boston
Emerson, Kendall	Worcester
Emmons, Arthur B., 2nd	Boston
Emmons, Henry M.	Jamaica Plain
ERLENBACH, JAMES H., National Guard	Dorchester
Ernst, Harold C.	Boston
Eustis, Richard S.	Boston
Evans, Robert J., Jr.	Springfield
Ewing, Edward H.	Stoughton

Favour, Richmond, Jr.	Natick
Faxon, Nathaniel W.	Stoughton
FAY, WILLIAM J., National Guard	Worcester
Fellows, Albert W.	Boston
Fennelly, Daniel J.	Fall River
Fenton, Alfred A.	Norwood
Fiege, Herbert R.	Waverley
Field, Henry M.	Norwood
FIELDEN, JOHN S. C., JR., Medical Corps	Fall River
Finnerty, Charles W.	Somerville
Fiske, Eben W.	Boston
FITTS, HENRY B., Navy	Provincetown
Fitts, John B.	Boston
Fitz, Reginald	Boston
Fletcher, Robert S.	Oxford
FOLEY, JOSEPH D., Medical Corps	Springfield
FORBES, ALEXANDER, Naval Reserve	Milton
Forbes, Henry	Boston
Ford, John F.	Boston
FORNELL, CARL H., Naval Reserve	Quincy
Foster, John H.	Boston
Fraim, Irving W.	Waltham
Fraser, Archibald McK.	Boston
Fraser, Somers	Boston
Fregeau, Aime N.	Fitchburg
French, Edward H.	Brighton
Frothingham, Channing, Jr.	Boston

Gage, Homer	Worcester
Gallagher, John H. C.	Chicopee
Gallagher, Nicholas A.	Malden
Ganley, A. J.	Methuen
GARDNER, HOWARD E., Navy	Springfield
*Gardner, Leroy U.	Cambridge
Gay, William M.	Sharon
Gelineau, Joseph H.	Easthampton
Gennert, Jacob	New Bedford
George, Arial W.	Boston
George, Frank W.	Worcester
Gettings, James H.	Boston
Ghoreyeb, Albert A. W.	Boston
Gilfillan, Donald	Worcester
GILLON, CHARLES G. C., Naval Reserve	Taunton
GLASS, JAMES, National Guard	Framingham
Gleason, Benjamin W.	Athol
Goethals, Thomas R.	Boston
GOLDEN, ROSS, Medical Corps	Boston
Goldthwait, Joel E.	Boston
Goodall, Harry W.	Boston
Goodwin, James J.	Clinton
Gosline, Harold I.	Boston
Gould, Clarke S.	Norwood
Gould, James A.	Westboro
Goulding, Timothy F.	Boston
GRABFIELD, GUSTAVE P., National Guard	Boston
Graham, James M.	Ft. Revere
GRAHAM, OTIS L., Medical Corps	Boston
Grandison, Louis J.	Charlestown
Greaney, William F.	Holyoke
Green, Hyman	Boston
Green, Milo C.	Boston
Greene, Richard C.	Northampton
GREENOUGH, ROBERT B., Naval Reserve	Boston
Greenwood, Allen	Boston
GUNTER, FRED C., National Guard	Boston
GUTHRIE, ANDREW D., Naval Reserve	Medford
Gwynne, Samuel C.	Worcester

HAIGH, GILBERT, Naval Reserve	Worcester
Hale, Frank S.	Brookline
Haller, David A.	Boston
Hamilton, Burton E.	Roxbury
Hamlin, William E.	Waltham
HAMMOND, JOHN W., JR., Naval Reserve	Cambridge
HANDY, HARRY T., Red Cross	Scituate Ctr.
HANLON, MORGAN P., Naval Reserve	Cambridge
Hannon, Daniel F.	Pittsfield
Hanscom, Ridgeley F.	Newton
Hapgood, Lyman S.	Cambridge
HARDWICK, SYDNEY, National Guard	Quincy
Harkins, William J.	Quincy
Harmer, Torr W.	Boston
Harriman, David E.	Springfield
Harris, Carl T.	Boston
Harris, Charles E.	Hyannis
HART, JOSEPH S., National Guard	Lincoln
Hartmann, Gustave	Lynn
Harvey, Samuel C.	Boston
Haskins, Abraham	Boston
HASSETT, LEONARD W., National Guard	Lynn
Hassman, David M.	Boston
Hatch, Ralph A.	Boston

Haywood, Ralph W.	Salem
HEFFERNAN, DAVID A., Naval Reserve	Cambridge
Henderson, George D., Jr.	Holyoke
Hiltpold, Werner	Easthampton
Hodgdon, Frank W., Jr.	Boston
Hodskins, Edward B.	Greenfield
Hodskins, Morgan B.	Palmer
Hollings, Charles Byam	Boston
Hooker, Sanford B.	Boston
HOPKINS, LAWRENCE P., Naval Reserve	Somerville
Hopkins, Ralph H.	Boston
HORNOR, ALBERT A., National Guard	Boston
Horrax, Gilbert	Boston
Horrigan, Arthur J.	Holyoke
Houston, David W., Jr.	Boston
Howard, Frederick H.	Williamstown
†Howe, George P.	Boston
*Howe, Walter C.	Boston
Hudson, Carl B.	Boston
Hughes, Edgar H.	Northampton
Hunt, Robert B.	Boston
Hussey, Earle E.	Fall River
Hyman, Clarence H.	Boston

Ilsley, Frederick R.	Medford
Irving, Frederick C.	Boston
IRWIN, GRATTON G., Navy	Greenfield

Jackson, Arthur M.	Boston
Jackson, John P.	Fall River
Jackson, Sumner W.	Boston
Janes, Arthur P.	Boston
Janes, B. Franklin	Northampton
Janney, James C.	Boston
JENKINS, THOMAS L., National Guard	Topsfield
Jennings, John G.	Auburndale
Jensen, William C.	Worcester
Jessaman, Leon W.	Framingham
Jillson, Walter A.	Westboro
Johnson, Alfred E., Jr.	Greenfield
Johnson, Erik St. J.	New Bedford
JOHNSON, HERBERT L., National Guard	Roxbury
Johnson, Leighton F.	Norwood
JOHNSON, LEWIS W., Navy	Greenfield
Johnson, Peer P.	Beverly
JOHNSTON, CLYDE C., National Guard	Springfield
JONES, FREDERICK E., National Guard	Quincy
JONES, GLENN I., Medical Corps	Ayer
Jones, Robert L.	Lowell
Jones, Thomas P.	Roxbury
Judkins, Louville M.	Boston

Kane, William V.	Lynn
Kaufmann, Samuel B.	Fall River
Keaney, Henry J.	Everett
Kearney, John H.	Fitchburg
KEEGAN, JOHN J., Naval Reserve	Boston
KEENAN, GEORGE F., National Guard	Brighton
Keenan, James A.	Boston
KELLEHER, SIMON B., National Guard	
KELLEY, ROBERT E. S., Navy	Mattapan
Kelly, John J.	Marlboro
Kemmerer, Theodore W.	Boston
KENNEDY, THOMAS J., Navy	So. Hadley
*Kepler, Charles O.	Boston
Kerr, William J.	Boston
Kewer, Leo T.	Waverley
Kilroy, Philip	Springfield
King, Edward	Boston
KING, FREDERICK A., National Guard	Boston
Kinnicutt, Roger	Worcester
Kinsley, William G.	Boston
KIRKPATRICK, GEORGE H., National Guard	Lynn
Kirkwood, Allan S.	Newton Ctr.
Kissock, Robert J.	Boston
Knowles, Edward A.	Revere
Knowles, William F.	Boston
Koefod, Hilmar O.	Boston
Kreutzmann, Henry A. R.	Boston

LADD, MAYNARD, Red Cross	Boston
LaFortune, Wilfrid T.	Fitchburg
Lally, William J.	Pittsfield
Lambert, John H.	Lowell
Lancaster, Walter B.	Boston
Lane, Clarence G.	Woburn
Lane, John W.	Boston
Lane, Walter A.	Milton
LANOIS, ESDRAS J., Naval Reserve	Northboro
Lanpher, Howard A.	Chester
LaRiviere, Evariste	New Bedford
Latham, Benoni M.	Mansfield
LAWRENCE, HOWARD F., Navy	Falmouth
Leavitt, Frank C.	Belmont
Leavitt, Peirce H.	Brockton
Ledbury, John W.	Uxbridge
Lee, Roger Irving	Cambridge
Lee, Wesley T.	Boston
Leith, Richard B.	Cambridge
Leland, George A., Jr.	Boston
Leland, Harold L.	Lowell
Lemaire, Willard W.	Worcester
Lemaire, William F.	Lynn
Lemay, Alfred M.	Brockton
LENA, HUGH F., Naval Reserve	Boston
LENTINE, GASPARE E., National Guard	
Leverton, Reuben L.	Boston
Lewis, Elisha S.	Princeton
Lewis, Frank E.	Nantucket
Light, Emmett E.	Springfield
Limauro, Louis H.	Lynn
Lincoln, George C.	Worcester
Lincoln, Merrick	Worcester
Lindsey, John H.	Fall River
Little, George T.	Uxbridge
Littlewood, Thomas	Pittsfield
Livingston, Clarence B.	Lowell
Long, Rufus W.	Boston
LORD, FREDERICK T., Red Cross	Boston
Lovesey, Burton E.	Lowell
Lovett, Robert W.	Boston
Lowe, Thomas S.	Fort Rodman
Lowney, Dennis J.	New Bedford
Lund, Fred B.	Boston
Lurier, Israel	Worcester
Lyman, Henry	Boston
Lynch, Charles F.	Springfield
LYON, JAMES A., National Guard	

MacAusland, Andrew R.	Boston
MACDONALD, FRED L., Red Cross	Waltham
MacIver, George A.	Boston
MacKnight, Richard P.	Fall River
MacKnight, William F.	Fall River
MacNaughton, Wallace F.	Boston
Macomber, Donald	West Newton
MacPherson, John D.	Boston
*Mahoney, Daniel F.	Boston
Mahoney, John F.	New Bedford
Mahoney, John L.	Boston
*Mahony, Francis R.	Lowell
MAINS, CHARLES F., National Guard	Milton
Maloney, John M.	Springfield
MALONSON, JAMES H., National Guard	
Mann, Henry L.	Boston
*Mannix, Louis E.	Chicopee Falls
Marble, Henry C.	Boston
Marlow, Searle B.	Boston
MARTIN, HARRY C., National Guard	Springfield
Martin, John F.	Boston
Marvin, Frank W.	Boston
Mason, Nathaniel R.	Boston
MATHES, ROY W., Naval Reserve	Lynn
Mathewson, Frank W.	New Bedford
*May, James V.	North Grafton
McCaffrey, Jerome J.	Attleboro
McCann, William S.	Boston
MCCARTHY, EUGENE J. National Guard	Malden
McCarthy, Louis F.	Malden

McCormick, John J.	Woburn
McCormick, William A.	New Bedford
McCrudden, Francis H.	Boston
McDonald, William J.	Brookline
McFadden, James F.	Foxboro
McGillicuddy, Cornelius J.	Boston
McGraw, Andrew J.	Taunton
McGuire, Joseph H.	Boston
McKENNA, PETER G., National Guard	Boston
McLaughlin, Arthur O.	Haverhill
McLaughlin, English N.	Newton
McLean, John A.	W. Somerville
McMahon, William T.	Pittsfield
McPherson, William E.	Canton
McQuestion, Philip	Boston
Means, James H.	Boston
Medalia, Leon S.	Boston
Medlar, Edgar M.	Boston
Meehan, Patrick J.	Lowell
Merrill, Adelbert S.	Boston
Merrill, Charles H.	Lynn
Merrill Clyde H.	Marlboro
Merrill, Everett A.	East Lynn
Merrill, William H.	Lawrence
MERRITT, EDWARD L., Naval Reserve	Fall River
Merritt, Victor S.	Springfield
MESSER, EDWARD R., Naval Reserve	Pittsfield
Metcalf, Ben Hicks	Winthrop
Miller, Percy F.	Harwich
MILLER, RICHARD H., National Guard	Boston
MILLET, JOHN A. P., Medical Corps	Boston
Millett, Frank A.	Greenfield
Milot, Wilfred F.	Attleboro
Mitchell, Frank W. A.	Lynn
Mixter, Charles G.	Boston
Mixter, Samuel J.	Boston
Mixter, William J.	Boston
Moline, Charles	Sunderland
Moncrieff, William A.	New Bedford
MONTGOMERY, JAMES B., Medical Corps	Boston
Moore, Howard	Boston
Mooring, Scott W.	Gloucester
MORAN, CHARLES L., Navy	Roxbury
Moriarty, Patrick M.	Springfield
Morris, Samuel L., Jr.	Boston
Morrison, William R.	Boston
Morriss, William S.	Fall River
Morse, Frank L.	Somerville
Morton, John J., Jr.	Boston
Mosher, Harris P.	Boston
Mossman, George	Westminster
Moulton, Starr A.	Winthrop
Munro, Donald	Milton
Murphy, James M.	Palmer
Murphy, John J.	Cambridge
Murphy, Joseph L.	Taunton

Neal, Kemp P.	Boston
*NEVERS, HARRY H., National Guard	Lawrence
Newton, Roland S.	Westboro
Newman, Leon	Jamaica Plain
Nichols, Andrew	Danvers
Nichols, Edward H.	Boston
Nichols, Nelson E.	Boston
NIELSEN, EDWIN B., National Guard	Boston
Norbury, Frank G.	Boston
Norris, Rolf C.	Methuen
Noyes, Nathaniel K.	Duxbury

Ober, Frank R.	Boston
Oberg, Frank T.	Worcester
O'BRIEN, FRANCIS E., Navy	Northampton
O'BRIEN, THOMAS J., Naval Reserve	Westboro
O'Connor, Dennis F.	Worcester
O'Connor, Patrick H.	New Bedford
O'Day, Sylvester F.	Ft. Andrews
O'Dea, Patrick J.	Attleboro
Odeneal, Thomas H.	Beverly
O'Donnell, John J.	Boston
Ohler, William R.	Boston
Olin, Harry	Roxbury
Oliver, Everard L.	Boston
O'Neil, Richard F.	Boston
Osgood, George	Cohasset
Osgood, Howard	Boston
Osgood, Robert B.	Boston
Otis, Walter J.	Waverley
Overholser, Winfred	Westboro
OWEN, ALBERT S., National Guard	Framingham

Packard, George B., Jr.	Boston
Palfrey, Francis W.	Boston
Palmer, Walter W.	Boston
Papen, George W.	East Boston
Parcher, George C.	Saugus
*Parker, Frederic, Jr.	Boston
PARKER, HAROLD F., National Guard	Boston
Parker, Raymond B.	Winthrop
Parker, Willard S.	Boston
Parkhurst, Guy McM.	Cambridge
Parlow, George G.	Fall River
Parris, Roland O.	Brookline
Partington, Cyrus B.	Fall River
Pascoe, James B.	Ft. Revere
Peabody, Charles W.	Boston
Peabody, Francis W.	Boston
Pease, Charles W.	Needham
Penhallow, Dunlap Pearce	Boston
PERCY, KARLTON G., Red Cross	Brookline
Perkins, Hamilton C.	Boston
Perkins, Roy S.	Lowell
Perry, Arthur P.	Boston
Perry, Charles E.	Northampton
Perry, Herbert B.	Northampton
Perry, Walter L.	Worcester
Peters, John D.	Gt. Barrington
Pettengill, Warren M.	Boston
Pettey, John A.	Brockton
Pfeiffer, Albert	Lexington
Phelan, Edward F.	N. Brookfield
Phillips, John C.	Wenham
*Phipps, Cadis	Boston
Pierce, Appleton H.	Leominster
PIERCE, REUEL A., National Guard	Canton
Pike, F. May	Melrose
Piper, Frank	Boston
Plouffe, Bernard L.	Webster
Plummer, Frederic H.	Chelsea
Porter, Charles T.	Boston
Powers, Harris E.	Boston
Pratt, Joseph H	Boston
Priest, Herbert B	Ayer
Provost, Raoul G.	New Bedford
Pulsifer, Nathan	Lowell

Quackenboss, Alexander	Boston
Quinn, James H.	Springfield

RAPPORT, DAVID L., National Guard	
Rattey, Arthur A.	Lawrence
Reed, Carlisle	Boston
Reese, John A.	Boston
Reid, William D.	Newton
Rice, George A.	
*Riggs, A. Fox	Stockbridge
*Riley, Augustus	Boston
Ripley, Harold W.	Boston
RISLEY, JOHN N., Naval Reserve	New Bedford
Roberts, Wyatt S.	Boston
Robertson, Oswald H.	New Bedford
Robey, William H., Jr.	Boston
Robie, Walter F.	Baldwinsville
Robinson, Henry A.	Marlboro
Rochford, Richard A.	Boston
Rockwell, J. Arnold, Jr.	Cambridge
Roderick, Charles E.	Taunton
RODGER, JAMES Y., National Guard	Lowell
RODRICK, ALBERT F., Naval Reserve	Fitchburg
Rogers, Edmund A.	Brookline
ROGERS, JOHN A., Medical Corps	Lowell
Rogers, Lester B.	Orange

Rogers, Mark H.	Boston
Rogers, Orville F., Jr.	Dorchester
Rosen, Edward	Cambridge
ROSENAU, MILTON J., Naval Reserve	Boston
Rudman, Benjamin W.	Boston
Rumage, William T.	Boston
Rumrill, Samuel D.	Springfield
RUSHFORD, EDWARD A., National Guard	Salem
Ryan, William F.	Lowell
Ryan, William P.	Holyoke
RYDER, CHARLES E., Navy	So. Boston
Salerno, Louis F.	Boston
Salmon, Charles A.	Worcester
Sanborn, Frederick R.	Lynn
SARNO, AVERY H., Naval Reserve	Boston
Savage, Joseph C.	Boston
Sawyer, Alpha R.	Boston
Sayles, Joseph B.	Taunton
Scanlon, Joseph M.	Lawrence
Scannell, David D.	Boston
Scannell, Edward J.	Chelsea
Schadt, George L.	Springfield
Schirmer, Joseph W.	Boston
SCHLEY, WILLIAM S., National Guard	Lynn
Schnack, Adolph G.	Cambridge
Schneider, Harry A.	Pittsfield
Schofield, Otho L.	Wellesley
Schofield, Roger W.	Worcester
SCOTT, NORMAN M., Medical Corps	Boston
Schwartz, George H.	East Boston
Sears, Harry E.	Beverly
SECORD, WALTER N., Naval Reserve	Newton
Segal, Joseph	Jamaica Plain
SEGAL, SAMUEL, JR., Navy	Haverhill
Sellards, Andrew W.	Boston
Sellew, Robert C.	Mill River
Senecal, Raymond E.	New Bedford
Sewall, Clarence W.	Boston
Shapira, Albert A.	Boston
SHARP, ROBERT G., Red Cross	Boston
Sharry, Charles F.	Somerville
Shaw, John H.	Plymouth
Shea, Andrew F.	Lawrence
SHEEHAN, EDWARD B., National Guard	Boston
Sheehy, William C.	New Bedford
Shepley, Luther J.	Fall River
Shields, Warren S.	Boston
Shirk, George W.	Hatfield
Shultis, Frederick C.	Leominster
Shurtleff, Percy A.	Blandford
SILVERMAN, MAX, Naval Reserve	Brockton
Simmons, Edward B.	Worcester
Simmons, Hugh L.	Worcester
Simmons, Ralph H.	Fall River
Simpson, Joseph	Essex
Sinclair, Donald B.	Williamstown
Skirball, Joseph J.	Boston
Skirball, Louis I.	Revere
SLEEPER, FRANK W., Naval Reserve	Dorchester
Small, Albert E.	Melrose
Smith, Edwin E.	Quincy
Smith, Erdix T.	Springfield
Smith, John J. H.	Cambridge
Snow, Frank W.	Newburyport
Solomon, Sidney J.	Revere
Souter, William N.	Boston
Souther, Robert F.	Boston
Spellman, Martin H.	Whitman
Spencer, Oscar L.	Lynn
Spooner, Lesley H.	Boston
Spruit, Charles B.	Boston
Staatz, Karl S.	Worcester
*Stack, John J	Boston
Stansfield, Clarence W.	Fall River
Stapleton, Willard Pierce	Worcester
St. Clair, Austin E.	Boston
STEARNS, ALBERT F., Naval Reserve	Billerica
STERN, NEWTON S., Medical Corps	Jamaica Plain
Stetson, Frank E.	New Bedford
Stevens, Franklin A.	Boston
STEVENS, HORACE P., Naval Reserve	Cambridge
Stick, Henry L.	Baldwinsville
Stickney, Whitney G.	Beverly
Stoddard, James K.	Boston
Stoddard, James L.	Boston
Stoddard, Mortimer J.	Springfield
Stone, James S.	Boston
STOWE, IRVING E., Naval Reserve	Brookline
Strahlmann, Louis	Boston
Streeter, Edward C.	Boston
Streeter, John F.	Springfield
Strong, Richard P.	Boston
Sturgis, Walter H.	Allerton
Sullivan, Daniel J.	Boston
Sullivan, John A.	Pittsfield
Sumner, Harry H.	Lowell
SURLS, JOSEPH K., National Guard	
Sussler, David	Dorchester
Sweeney, John G.	N. Cohasset
Sweeney, Michael T.	Atlantic
Tate, Harry J.	Pittsfield
Taylor, John H.	Cambridge
Teague, Oscar	Boston
TENNEY, WM. N., National Guard	Canton
Thaxter, Langdon T.	Boston
Thom, Douglas A.	Worcester
Thomas, Arthur W.	Boston
Thomas, Elmer E.	Northampton
Thomas, Henry M.	Boston
Thomas, John J.	Boston
Thomes, John B.	Pittsfield
Tierney, Thomas F.	Hudson
Tobey, Harold G.	Boston
Towne, Edward B.	Boston
Tracy, John M.	Springfield
Trask, John W.	Lynn
Treichler, Albert J.	Springfield
Truesdale, Philemon E.	Fall River
Tucker, Cassell C.	Boston
Tucker, Willis L.	Hinsdale
TULLY, GEORGE L., Naval Reserve	Roxbury
Tully, George W.	Southbridge
Turner, William K.	New Bedford
Tuttle, Howard R.	South Acton
Ullian, Louis J.,	Boston
Underwood, George B.	Gardner
Upton, Charles L.	Shelburne Fls.
Van Gorder, George W.	Brookline
VAN METER, ABRAM L., Medical Corps	Boston
Vaughan, Warren T.	Boston
Viets, Henry R.	Boston
Vincent, Beth	Boston
WALCOTT, WM. W., National Guard	Natick
Walker, Melvin H.	Pittsfield
WALSH, JAMES J., National Guard	Lexington
Ward, Edward S.	N. Attleboro
Warden, Ralph A.	Boston
Warren, John	Boston
Washburn, Frederic A.	Boston
WATERHOUSE, ROBERT M., Navy	Newton
Watkins, Harvey M.	Palmer
Watt, Charles H.	Fall River
Wearn, Joseph T.	Boston
Webber, Wolfert G.	Boston
Webster, John B.	New Bedford
Weiser, Walter R.	Springfield
WELBOURN, MARSHALL A., National Guard	Boston
WESSELHOEFT, CONRAD, National Guard	Boston
Wesselhoeft, William F.	Boston
Wheat, Harry R.	Springfield
Wheatley, Frank E.	N. Abington
Whelan, Charles	Hingham
WHELAN, EDMUND V., Naval Reserve	Bridgewater
WHIPPLE, GEORGE C., Red Cross	Cambridge

WHITCOMB, CLARENCE A., Naval Reserve	Malden
White, George A.	Cambridge
WHITE, JOHN R., Navy	Lynn
WHITE, JOSEPH W., Navy	Boston
White, Paul D.	Boston
Wiggin, Ralph C.	Boston
WIGGIN, WILLIAM I., Red Cross	Lowell
Wilbur, George	Boston
Wilhoit, Sterling E.	Boston
WILLIAMS, FRANK P., National Guard	Boston
Wilson, Charles H.	Chelsea
Winslow, Edward S.	Easthampton
Wislocki, George B.	Boston
WITHINGTON, ALFREDA B., Red Cross	Pittsfield
Withington, Paul	Boston
Withington, Paul Richmond	Boston
Wood, William F.	Boston
Woodard, James M.	Salem
Woods, Alan C.	Boston
WOODWARD, LEROY A., Naval Reserve	Worcester
Woodworth, John D. R.	Boston
Wright, Charles W.	Lanesborough
*Wright, James H.	Boston
Wright, Wade S.	Boston
Wyant, John	Boston
Wyman, Edwin T.	Boston
Wyman, John H.	Medway
Yeamans, Herbert W.	Warren
Yoosuf, Abraham K.	Worcester

MASSACHUSETTS PHYSICIANS IN THE BRITISH SERVICE.

This is not an official list, and is necessarily incomplete. The committee would be glad to receive additions and corrections.

Bridges, Stanley	Worcester
Cabot, Hugh	Boston
Crabtree, Ernest G.	Boston
Jouett, Fred R.	Cambridge
MacKay, William H.	Worcester
Raymond, Albert C.	Worcester
Shattuck, George C.	Boston
Shepard, William G.	Lynn
Stansfield, Oliver	Worcester

Obituary.

JAMES OLIVER, M.D.

DR. JAMES OLIVER, one of the most honored and well-known citizens of Athol, his native town, died recently at his home in Athol Highlands, at the age of 81 years.

Dr. Oliver had for many years been a leader in Athol affairs, and was for well over half a century a practising physician in that town. Some years ago he retired to enjoy his later years in the political field. He represented the district in which he lived for four years in the House. In both military and health affairs he took an active part, serving as chairman of military and health committees.

Dr. Oliver was the third of the same name to be born in Athol, and was the only son of James Oliver. He was born June 28, 1836. When he was seventeen he taught school at a salary of $14 a month. Later he taught in North Orange and Phillipston and at intervals attended the local high school. He also taught in both the Athol Grammar and High Schools.

In 1860 he began the study of medicine with the late Dr. J. P. Lynde, finally becoming a practising physician in 1862. At the outbreak of the Civil War he was commissioned an assistant surgeon in the 21st Regiment. His record in the war was notable and honorable. At the second battle of Bull Run he was left in charge of the sick and wounded, was taken prisoner, but later managed to escape. He participated in the great battles of South Mountain and Antietam, and was later promoted to be surgeon of the 21st Regiment, on May 26, 1864. He went through many battles and was finally mustered out on July 30, 1865.

After a residence of a few years in South Carolina, where he engaged in planting and cotton raising, Dr. Oliver returned to Athol, where he resumed his medical practice. He was much interested in the social affairs of his town, the G. A. R., the Grange, the schools and town business generally. He was a prominent figure in town meetings where he showed much strong common sense. In debate he was an able speaker and could hold his own with the best speakers in Athol and in the State Legislature. He was a member of the Athol Lodge of Masons and a leader in the old First Unitarian Church.

During his life he held several town offices, being for a long period of time a member of the school board, and for many years medical examiner of his district. For about twenty years he was chairman of the Cemetery Commission of Athol, and rendered most valuable service.

In 1876 he married Miss Kate Johnson, daughter of the late George T. Johnson. Mrs. Oliver died some years ago. They had two children, Mrs. Annie J. Kendrick, who survives her father, and the late James Oliver, an only son, who died some years ago.

In 1916 Dr. Oliver published his autobiography, a book of 150 pages, in which he gives the history of the Oliver family from the date of the first settlement in Athol of the four brothers, John, James, Robert and William Oliver, who came to Athol from Hatfield in 1735. This autobiography is a most interesting and entertaining work, full of sketches of the life in Athol, anecdotes, stories, and accounts of events occurring before and during the Doctor's life. The book gives an account of the author's own life, his early trials amid straitened circumstances, his schooling, teaching, medical training. His story of his experiences in the Civil War is full of interest. In his capacity of surgeon of the 21st Regiment, he was most valuable to the Government and later received many testimonials in recognition of his services. Many of the Doctor's addresses before the Legislature are also comprised in this book, including those on health and military matters.

Personally, Dr. Oliver, often called Athol's grand old man, was delightful to meet and know. He was a great favorite in the Legislature, and was there held in great esteem both for his interesting conversation and pleasing personality. Absolutely honorable and unselfish, he was held in universal esteem and veneration.

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Miscellany.

MEMORIAL TO DR. CUTTS.

THE following memorial to Dr. Cutts was read and adopted at a meeting of the Brookline Medical Club on February 28, 1918:

"In the death of Harry Madison Cutts, a former President, the Brookline Medical Club has suffered a loss which it will be impossible to fill. It was chiefly through his efforts that the Club came into existence, and his interest in its welfare had been most keen. Always ready to do more than his share of work, he contributed much to the success of the Club. He helped in a large measure to unite the medical profession of Brookline and to develop a spirit of coöperation and good fellowship. The good ethical tone of medical practice in Brookline and the pleasant relations which exist between members of the profession are due in great part to the influence of Harry Cutts. The conscientiousness which characterized all his work, whether for his patients or the community, showed itself in the service which he gave to his country up to the last week of his life.

Resolved, That the deepest sympathy be expressed to his family in their great loss.

Resolved, That a copy of the above be entered in our records, sent to his family, and published in the local papers.

B. S. BLANCHARD,
G. H. FRANCIS,
F. P. DENNY,
Committee."

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NOTICE OF COMPETITIVE EXAMINATION FOR QUALIFICATION ON THE ELIGIBLE LIST OF CANDIDATES FOR POSITIONS AS STATE DISTRICT HEALTH OFFICERS AND EPIDEMIOLOGIST IN THE MASSACHUSETTS STATE DEPARTMENT OF HEALTH.

Although the law leaves the appointment of District Health Officers and the Epidemiologist in the hands of the Commissioner of Health, it is the policy of the State Department of Health to hold competitive examinations as the principal basis for selecting appointees.

On April 1st and 2nd, 1918, and on subsequent dates to be announced at that time, an examination will be held for the purpose of establishing an eligible list of appointments to positions as State District Health Officers and Epidemiologist of the Massachusetts State Department of Health.

The written examination will be held on the above dates in the examination room of the Civil Service Commission, No. 15 State House, Boston. The oral and practical examinations will be held on dates and at places announced at the time of the written examination.

In the immediate future there will be one appointment to the position of State District Health Officer and one to the position of Epidemiologist.

Persons possessing the necessary qualifications and desiring to enter the competitive examination of this service are requested to communicate with the State Commissioner of Health, State House, Boston, at once. Upon such written application, a list of rules and regulations governing the appointment and promotion of District Health Officers and Epidemiologist and an application blank will be sent.

Admission to the examination is governed by these regulations. Physical fitness is a necessary prerequisite, but no percentage credits are given on physique. The examination comprises written, oral and, if feasible, practical tests.

Relative rating on the eligible list is established on the basis of:

(*a*) Previous experience in public health work, both administrative and scientific —maximum 25 points.
(*b*) Results of oral examination—maximum 25 points.
(*c*) Results of written examination—maximum 50 points.

A. J. MCLAUGHLIN,
March 8, 1918. *Commissioner of Health.*

STATE DEPARTMENT OF HEALTH OF MASSACHUSETTS.

REGULATIONS GOVERNING APPOINTMENT OF STATE DISTRICT HEALTH OFFICERS AND EPIDEMIOLOGIST.

Grades. (1) There shall be four grades, viz: A, B, C and D.

Officers appointed only to Grade D. (2) Candidates for these positions, after passing a successful examination, shall be eligible for appointment to Grade D.

Form of application for appointment. (3) Candidates must make application addressed to the Commissioner of Health in their own handwriting, asking permission to appear before a Board of Examiners. Candidates shall state their age, date and place of birth, present legal residence, names of colleges or institutions of learning of which they are graduates, date of graduation, and shall furnish testimonials as to their professional experience and moral character.

Age Limit. (4) No candidate will be eligible to appear before a Board of Examiners whose age is less than twenty-three years or more than forty years. Candidates over thirty-five must have had at least three years' practical experience in public health work.

Professional Requirements. (5) Candidates shall be graduates of an incorporated medical school, or shall have had at least five years' experience in public health work and sanitary science.

Citizenship. (6) All candidates must be citizens of the United States, and preference in appointment shall be given to residents of Massachusetts.

Physical Examination. (7) Candidates for appointment must pass a satisfactory physical examination before a Board of Examiners.

Board of Examiners. (8) The Board of Examiners shall consist of three or more members. These members shall be selected by the Commissioner of Health from the Public Health Council or other officials of the State Department of Health.

Scope of Examination. (9) All examinations of candidates shall be conducted by a Board of Examiners, and the examination shall include a physical examination and such oral, written and practical tests as the Board deems necessary in the subjects outlined in the succeeding sections. Experience and fitness shall also be rated by the Board of Examiners.

Subjects for Written Examination. (10) All candidates for appointment must pass a satisfactory written examination in Communicable Diseases, Hygiene and Sanitation, Preventive Medicine, Vital Statistics, Pathology and Bacteriology.

Compensation. (11) The compensation of District Health Officers and Epidemiologist shall be as follows:—

Grade A	$3500.00
Grade B	3000.00
Grade C	2500.00
Grade D	2000.00

When Promoted. (12) After six months' satisfactory service in Grade D, an officer is entitled to promotion to grade C. After three years' satisfactory service in Grade C, an officer is entitled to examination for promotion to Grade B. After five years' satisfactory service in Grade B, an officer is entitled to examination for promotion to Grade A.

Examinations for Promotion. (13) Examinations for promotion shall be conducted by a Board of Examiners, who shall take into account the efficiency record of the candidate as well as his professional and physical fitness. Failing first examination an officer may be given a second examination after one year. Failing two successive examinations, such an officer shall be dropped from the rolls.

Tenure of Office. (14) A District Health Officer or an Epidemiologist may be removed from office by the Commissioner of Health because of failure to pass two successive examinations for promotion, or because of gross misconduct or inefficiency, but only after the accused officer has been furnished with a copy of the charges made against him and given a hearing thereon by the Public Health Council.

Note. In view of war conditions, the maximum age limit will not be strictly adhered to in candidates whose other qualifications are exceptional. No candidate of military age will be considered unless he can convince the Board of Examiners that he is to be exempted from military service, either on grounds of dependency or on physical disability. In regard to the latter cause for exemption from military service, he should bear in mind the physical requirements for the position he is seeking, and that many causes for rejection from the service would operate here.

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SOCIETY NOTICES.

Suffolk District Medical Society.—A meeting of the Medical Section will be held on Wednesday evening, March 20, 1918, at the Boston Medical Library, at 8.15 p.m.

James Alexander Miller, M.D., who was one of a commission sent to France last summer by the Rockefeller Foundation to study the problem of tuberculosis, will speak on "Social and Health Conditions among the Civilian Population of France."

Light refreshments after the meeting.

Gilbert Smith, *Secretary.*

Worcester District Medical Society.—The regular meeting will be held Wednesday, March 13 , at 4.15 p.m., in G. A. R. Hall, 55 Pearl Street, Worcester.

Paper—"Some Surgically Remediable Gastro-Intestinal Diseases," by Dr. Michael F. Fallon, Worcester. The paper will be illustrated by lantern slides.

Dr. A. W. Marsh will report progress on the plans for Medical Mobilization in case of a great local disaster.

Ernest L. Hunt, *Secretary.*

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RECENT DEATHS.

Sallie Justina Ermentrout, M.D., a former practitioner in Boston, died at Eldridge, California, of lobar pneumonia, November 14, 1917, aged 60 years. She was born in Reading, Pa., May 18, 1857, graduated at the Woman's Medical College of Pennsylvania, Philadelphia, in 1891, and settled in Boston, joining the Massachusetts Medical Society in 1893. She moved to California in 1913.

John George Blake, M.D., died at his home in Boston, March 4, 1918, aged 80 years.